



# MariTime

user manual



## Regatta Timing/ Photo Finish System



- kayak/canoe
- rowing
- dragon boat



Version 3.1

## **Feed-back**

If you find any errors or omissions in this document, or want to contact the author for any other reason, you are encouraged to send your message to [info@lightweightvideo.com](mailto:info@lightweightvideo.com)

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# Preface

## About this document

This document is intended to supply all the needed information for

- Evaluation
- Installation
- Use

of the MariTime program.

Reading this document will hopefully bring a good understanding of MariTime.

Better yet is of course to use the software in practice. On the MariTime website you can download the free version of MariTime together with some sample files, allowing you to get good initial hands-on experience.

## How is this document organized?

This first part of the document covers the aspects of preparing for and running an event.

If you are an absolute beginner you may want to read and follow the parts about installing MariTime, and setting up the hardware (camera, computer network etc.)

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# **What is MariTime?**

MariTime is a system that has the capability to assist organizers of races for canoe, rowing dragon boat and similar events.

It is suited both for racing on individual courses as well as marathon racing.

MariTime is a computer program intended to run on a standard PC running Windows.

MariTime uses a low-cost standard DV video camera as its primary input.

By processing the input from the DV camera MariTime can produce accurate timing combined with visual documentation (photo finish) of the races.

# Preparing for the race

To prepare for a race there are a number of activities that should be performed.

- Physical installation and set-up of the camera
- Entering race specific data into MariTime

## Placing the camera

To get a good view of the finish line, the camera should ideally be placed as high as possible. The camera should be well protected from rain and wind.

Try to avoid having a glass or plastic window in front of the camera lens

MariTime normally uses a camera that is tilted 90°. This means that the available picture area is optimized. (This is for course racing. For marathon, the conditions are different)

The camera is tilted in such a way that the fold-out LCD display is pointing *downwards*, and the handle (always on the right-hand side of the camera) is pointing *upwards*.

It should be noted that when capturing video for marathon races it is often best to have the camera in the normal (non-tilted) position.



Illustration 1: DV camera tilted 90° using a tilt-head

Please note that both the FireWire cable and the power cable are run in a loop around the camera handle as a precaution. It is easy for a person to accidentally trip over one of these cables, resulting in damage to the camera.

Arranging some kind of strain relief is strongly recommended!

The initial set-up of the camera can be done by looking in the viewfinder or at the fold-out LCD screen. However, to get the optimum set-up it is best to view the picture on the computer screen. It is now time to start the program!

## Starting MariTime

You start MariTime just as any other Windows program, typically by double-clicking its icon.  
After starting the full version of MariTime, you will see the *Startup form*:

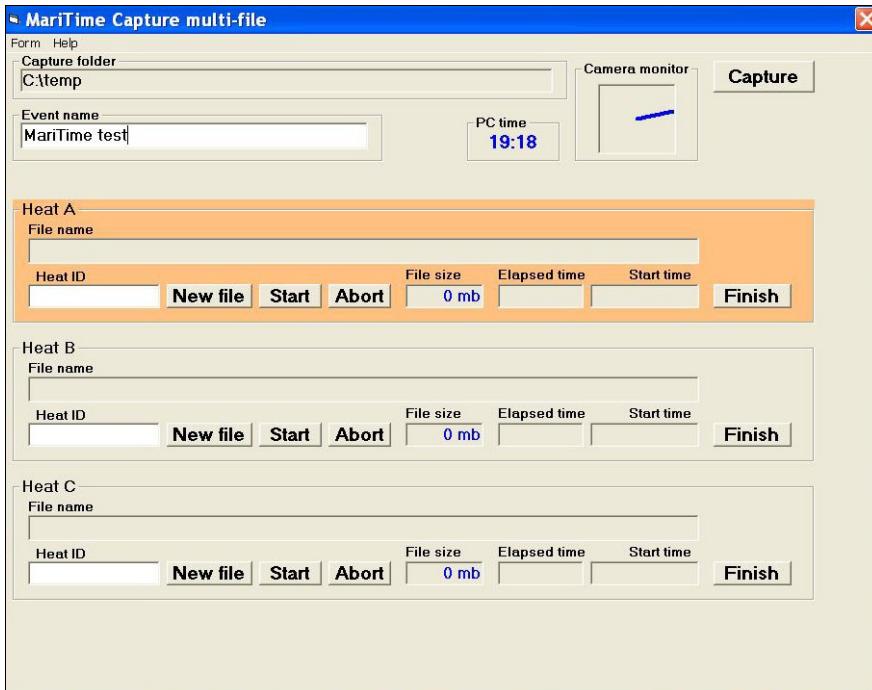


Illustration 2: The MariTime startup form

The choices here are:

- **Capture files**  
This is the normal choice when running the full version
- **View recordings**  
This is normally done running the free version

If you choose **Capture files** and press **Go** you will see the following form:



Provided that the camera is switched on and connected, you should now see a rotating blue arm in the frame named **Camera monitor**

This indicates that the program is receiving video data from the camera.

If the camera is connected and switched on and you still can not see the rotating arm, you will have to carry out problem solving as described on page 62.

## Preview Form

From the **Capture** form you can easily switch to the **Live Preview** form.

This is done by pressing **Ctrl-V** (or choosing **Video preview** on the **Form** menu).

Switching back to the **Capture** form is done by pressing **Ctrl-V** again.

As the name implies, the **Live preview** form will show live video from the camera.

Make sure that you are satisfied with the settings of the camera with respect to:

- Pan (horizontal position )
- Tilt (vertical position )
- Zoom
- Focus



*Illustration 3: A well-aligned goal line view*

With the boats coming from the left, you probably want a preview window looking like this:

All lanes should be visible, but it is not necessary to show much water outside of the lanes. Compared to digital still cameras, DV cameras have fewer pixels, and these must be used efficiently!

You should be aware of the fact that the camera viewfinder and/or LCD fold-out display are not totally accurate!

On a consumer DV camera, they will show a slightly cropped picture.

This cropping means that the computer actually receives a slightly bigger picture than what is shown in the the viewfinder and fold-out LCD display of the camera!

Comparing the image shown on the fold-out screen with the live preview on the computer screen will likely show a noticeable difference. Therefore it is best to perform the final camera adjustments with a computer connected to the camera and looking at the live display on the computer.

This is also a good time to ensure that the video camera parameters are set up correctly.  
See page 68!

### **Consider using dual cameras**

If you are arranging a race with both course racing and marathon, it might be a good idea to consider having two cameras. One camera tilted for course racing, and one camera in normal orientation. This is because it is rather delicate and time-consuming to achieve the “perfect” camera set-up, and during a hectic race-day, time is at a premium!

It is a simple task two switch between the two cameras by moving the firewire cable.

## Camera setup for Marathon

MariTime has the option to use the video camera either *rotated* or *normal*. The user is free to make his/her own choice.

Experience shows that it is often best to use a rotated camera for course racing, and a non-rotated camera for marathon.

In course racing time is assigned to each lane as the bow of the boat passes the goal line. There is really no need to see the number sign of the boat since the lane number is the important information.

For marathon, the situation is different. Boats pass the goal line at random, and the only way to identify the competitors is by reading the number sign. Therefore, the ideal camera set-up is one that gives a clear view of both the goal line and the number sign of each boat.

Here we see a good set-up:



Illustration 4: A good camera set-up for marathon

If too much zoom is applied, it may not be possible to see both the goal line and the number sign as shown here:



*Illustration 5: Too much camera zoom, number sign not visible*



*Illustration 6: Number sign visible only after forward scroll in file*

## Setting up lanes

With the DV camera installed and set up correctly, further preparation for the race can be made.

On the **Live preview** form you will see a frame called **Options**, with a number of controls:

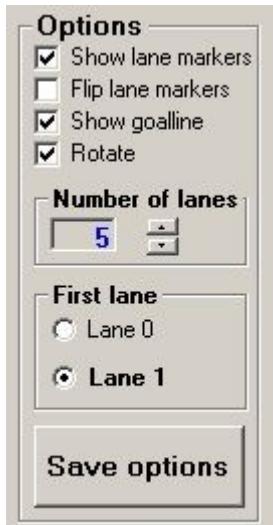


Illustration 7: Lane setup options

- **Show lane markers** will show/hide the lane markers  
(For marathon races, lane markers are not needed)
- **Flip lane markers** will flip the lane markers to accommodate boats coming in from the left or the right
- **Show goalline** will show/hide the electronic goal line
- **Rotate** indicates that MariTime is working with a 90° rotation of the camera
- **Number of lanes** has an up/down control allowing you to select the number of lane markers that will be shown
- **First lane** gives you the option to indicate that there is a lane numbered **0**. Normally lanes start with **1**, but in the event that you want a lane **0**, this is the way to do it.

## Positioning lanes and goal line

On the **Live preview** form you should now position the lane markers and the goal line.

They can easily be moved by *dragging* them (hold down mouse pointer in goal line handle or in the lane marker circle and move).

Once you are satisfied you should click the **Save options** button.

Now, all the settings (options/positions etc.) are saved in the MariTime settings file.

In PC lingo this file is often called an *.ini file*.

MariTime does not use the Windows registry for saving settings data.

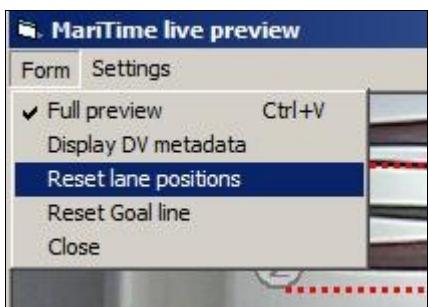
If you restart MariTime and re-enter **Live preview**, you will notice that all the settings you have made remain as you left them.

The positions of lane markers and goal line will also be included in all the video files that will be captured during racing.

Therefore, when these files are replayed on any PC, the positions of lanes and goal line will reflect the settings done during initial set-up!

## Resetting positions

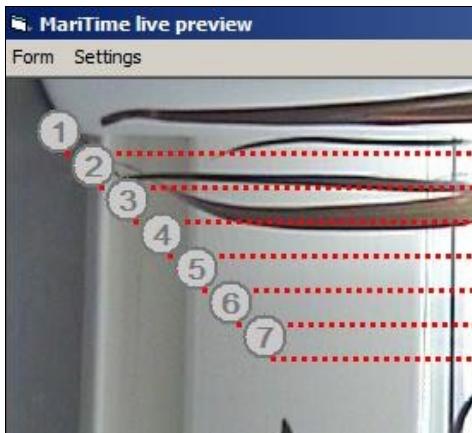
You may find yourself in the position that one of the handles of the goal line is outside of the screen, or that one of the lane markers has become “lost”. One reason for this to happen is that you have changed the orientation between rotated and un-rotated. To cope with this situation there are two items on the menu of the preview form as shown here:



*Reset lane positions* will position all the lane markers in close formation starting from the top left of the screen

*Reset Goal line* will position the goal line centered vertically on the screen.

After you have used these functions you can position the lane markers and goal lines manually. Don't forget to save the new positions!



After resetting the lane positions, this is how they will be positioned.

## About goal lines

One version of a traditional goal line used by race officials is constructed by a string positioned in front of the glass windows in the goal house. Officials are seated on several tiers, aligned to view the boats “through” the string.

It is possible to place the video camera in this position looking “through” the string.

However, due to optical restrictions it is impossible for the camera to exactly focus both on the string and the boats.

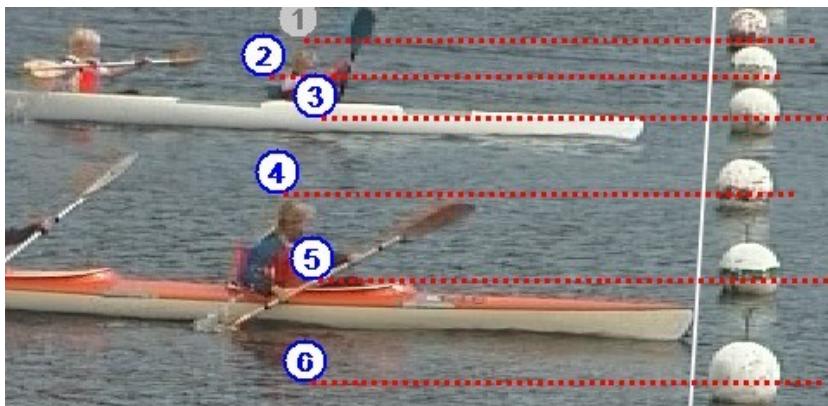
If focus is on the boats (which must be considered a natural priority) the picture will look like this.



*Illustration 8: A "physical" goal line (a black string)*

The goal line string is noticeable out of focus, albeit still useful.

We can compare this to a digitally rendered goal-line which can look like this:

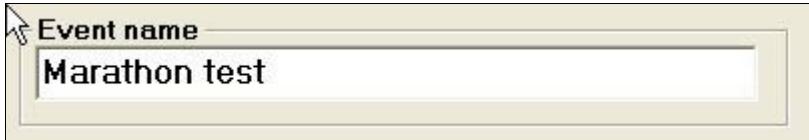


*Illustration 9: A digitally rendered goal line*

## **Entering event name**

A race meeting may have a name that you want on printouts and displays.

On the Capture form you simply enter the event name into the event name field as shown here:



In case that no event name has been entered (and no old event name remains stored) NOEVENT will be used.

# Capturing heat data

## Introduction

Capturing video/data files is the core function of MariTime.

Video capture is a task that is entirely separated from the post-processing, and many users prefer to perform this task on a dedicated computer.

## Preparation

It is assumed that all race preparations (Camera set-up etc.) have been performed as described earlier in this document .

To be ready for the first heat of the race, you should ensure that:

- The camera is set up correctly and sending data to the computer (as indicated by the rotating blue arm)
- You are satisfied with the picture transmitted from the camera
- The lanes and goal line have been set up correctly

## Heat operations

For each heat, the MariTime operator has a number of tasks to attend to:

- Entering heat data
- Initiate a new file
- Indicating heat start
- Activating video capture
- Indicating heat finish

## Entering heat data

### A walk-through of all the elements on the form

#### Heat frame

On the form there are 3 identical frames. Each *Heat frame* has the following contents:

- **Heat ID**  
This is the ID of the heat
- **New file**  
This button creates a new file for the heat, ready for video capture
- **Start**  
This button indicates start for the heat.  
More often the start signal is entered via the Control box.
- **Abort**  
This button is used to abort a heat, often as a result of a false start.  
An alternative method for aborting a heat is to press the *Esc* key on the keyboard.
- **File size**  
This field shows the current size of the file.  
For each video capture, the file grows in size.
- **Elapsed time**  
For a started heat, this field continually shows the elapsed time.
- **Start time**  
At heat start, the current PC time is displayed in this field.
- **Finish**  
When a heat is finished and all video capture is done, this button is used to initiate some “cleaning-up” routines
- **File name**  
This field displays the file name that is generated for the heat.

Each file captured by MariTime is assigned a unique file name.

The file name will be constructed from

- The event name (see page 17 for entering the event name)
- The heat ID
- The current date and time

Clicking **New file** will initiate the creation of a new file

#### Capture folder

The files captured during a competition must be put on a defined place on the computer disk.

The field **Capture folder** displays the folder chosen as a target for capture.

If you click in the field, you will be presented with a special form where you can select (or create) a folder for capture. The new or selected folder will be displayed in the field.

Normally, this folder will reside on the local hard disk of the computer assigned for capture.

## Capture

This button activates the actual capture of video data.

Capture is normally activated by toggling a switch on the **Control box**, but this screen button has the same effect. Capture should normally only be active when (or rather immediately before) boats are actually passing the goal line.

As soon as capture is deactivated again, the captured video is written from the initial RAM memory buffer to the designated file on the hard disk. This file-writing process is illustrated by progress bar. This progress bar will only be visible during the actual writing of the disk file.

## Heat frames

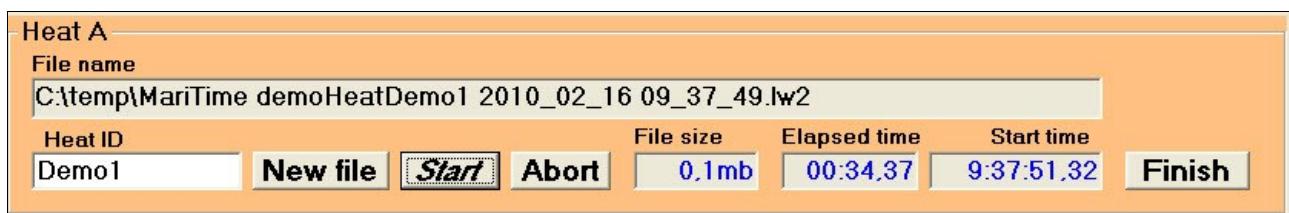
As you can see, the Capture form contains three identical **Heat frames**. Often, one such frame is all that is needed. The reason for there being three frames is that sometimes you need to be able to handle more than one heat running at the same time. This procedure is described later on page 22.

In the **ID** field you should enter the **heat identification**. Often this is a numerical value, but MariTime also allows alphabetical input.

Now, you await the start of the heat. For the time being it is assumed that the start will be input manually. A common procedure is that the starter and the goal house are in radio contact.

When you hear the starting signal (a shot, a siren or similar) you push the leftmost button on the control box. **Elapsed time** starts counting immediately. You can also see the exact time-of-day for the start of this heat.

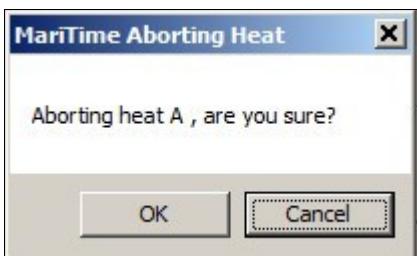
This is a **Heat frame** with a newly started heat:



It is important that the PC on-board clock is correct. If the PC is connected to the internet, this will normally be taken care of automatically. If not, manual setting of the PC clock may be necessary!

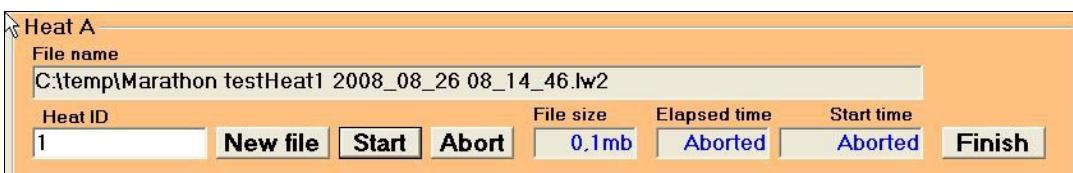
## False starts

In case of a false start, all you have to do is to press the **Esc** key on the keyboard. (Or click the **Abort** button)



If you want to abort the heat you should click the **OK** button, otherwise you press **Cancel**.  
(The Cancel button has focus, meaning that pressing **Return** will also mean Cancel)

An aborted heat will result in this display:



The heat is now awaiting a re-start.

This procedure (starting/aborting) can be repeated indefinitely.

## Starting a simultaneous heat

If the starter decides to start another heat with the boats from the current heat still on the course, this is handled as described here:

- Enter another heat ID in a free heat frame.
- Using **New File** you create a file for the new heat.
- Make sure that the new heat frame is *Active* (orange)  
(A Heat frame is made active (selected) by simply clicking it)
- Start the new heat in the normal fashion

With two running heats, our display might look as follows:

Heat A					
<b>File name</b> C:\temp\MariTime demoHeatDemo1 2010_02_16 09_43_02.lw2					
Heat ID	File size	Elapsed time	Start time		
Demo1	0.1mb	01:35.26	9:43:03.26	<b>Finish</b>	
<b>New file</b> <b>Start</b> <b>Abort</b>					
Heat B					
<b>File name</b> C:\temp\MariTime demoHeatDemo2 2010_02_16 09_43_11.lw2					
Heat ID	File size	Elapsed time	Start time		
Demo2	0.1mb	00:10.36	9:44:28.17	<b>Finish</b>	
<b>New file</b> <b>Start</b> <b>Abort</b>					

The clock is running in both **Elapsed time** fields simultaneously, but with different start times.

## Capturing video



Initially after the heat start the goal line will be empty, and there is no need to capture any video.

When the first boats approach the goal line, you should activate the actual video capture. This is done by flipping the right toggle switch on the control box to the **on** position..

When this switch is in the **on** position, every video frame coming from the camera is stored in the RAM memory.

In the **Camera monitor** frame you can observe during capture that:

- The rotating arm changes to **red**

When there is no longer any activity at the goal line, flip the capture switch back to its inactive (**off**) position again. This action will trigger MariTime to write the captured video to the file on the hard disk.

It is important to understand that the captured video frames will be appended to the file in the active Heat frame. Thus, if there are two heats running you have to ensure that you have the correct Heat frame selected when boats are approaching the goal line.

(For marathon racing, the procedure is different, but this is described elsewhere)

The video data that has been stored in the RAM memory is *appended* (i.e. written at the end) of the file. This procedure of activating and de-activating the video capture is normally repeated several times during a heat (or group of heats).

The post-processing of the captured video data will be more effective if the file only contains “action” video, and not an idle goal line.

Every time that video data is appended to the hard drive file it grows in size.

The field **File size** displays the current size of the file.

# The Control Box

## About the Control Box

The Control Box is central to the functions of heat capture.

The full version of MariTime can not operate without the Control Box.

The free version of MariTime does not need the Control box.

## Connections



**USB** is used to connect the Control box to the computer using a standard USB cable.

**Remote** is used to connect a *remote start* signal (if available).



This input uses a 6.3 mm (1/4") phono plug (mono)

A detailed description on using this input can be found on page 27

## Controls

### Push buttons

In MariTime version 3 onwards, only the leftmost push-button is used. It is used to indicate start of the heat in the selected Heat frame.



### Toggle switches

#### Capture

The toggle switch at the right is used to activate *video capture*.

When there is activity on the goal line that you want to capture, flip this switch to the **on** position.  
With no activity on the goal line, flip the switch to the **off** position.

#### Remote

When this switch is in the *off* position MariTime does not react to any changes on the remote input.  
When switched *on*, the remote input is active as described on page 27

## Testing the Control Box

On the *Capture form*, select **Test Control Box** from the **Form** menu as shown:



This will bring up a frame at the bottom of the **Capture form** as shown here:



Flipping the toggle switches or pressing one of the push buttons will be reflected by the corresponding action on the form.

At the upper left you can see a field that indicates the present status of the remote input.

At the lower right you can see a frame that indicates the present status of the Control Box and the serial number of the box.

If you press the left button with the pointer inside the LED above the Remote switch, this will light up the yellow indicator LED.

Selecting the menu item again hides the Control Box validation frame.

## Using Remote start

A remote start signal can have one of two different behaviours

- **N/O** (Normally open/not-conducting).  
This means that the circuit is normally open, and upon start the circuit closes.
- **N/C** (Normally closed/conducting)  
This means that the circuit is normally closed, and upon start the circuit opens.  
(this is the preferred behaviour of remote start equipment)

Above the **Remote** toggle switch you will find a yellow LED.

This LED indicates the current status on the remote input.

A lighted (glowing yellow) LED indicates that the remote input is *Closed*, and consequently a dark LED indicates that the the remote input is *Open*.

If you intend to only use manual start , the **Remote** switch should always be in the **off** position.

The procedure for using Remote Start is as follows:

- Position the **Remote** switch in the **off** position
- Ensure that the remote start equipment (not supplied with MariTime) is functioning properly. This can be done by observing the indicator LED
- When you are satisfied with the status on the remote input, put the remote switch to the **on** position.  
At the flip of the **Remote** switch, MariTime will store the status of the Remote input as the *Remote idle status*
- As soon as the status on the Remote input changes from the *Remote idle status* this is interpreted as a start signal for the current active heat.  
If you are running multiple heats, you must therefore ensure that the correct heat is active.

# Processing captured files

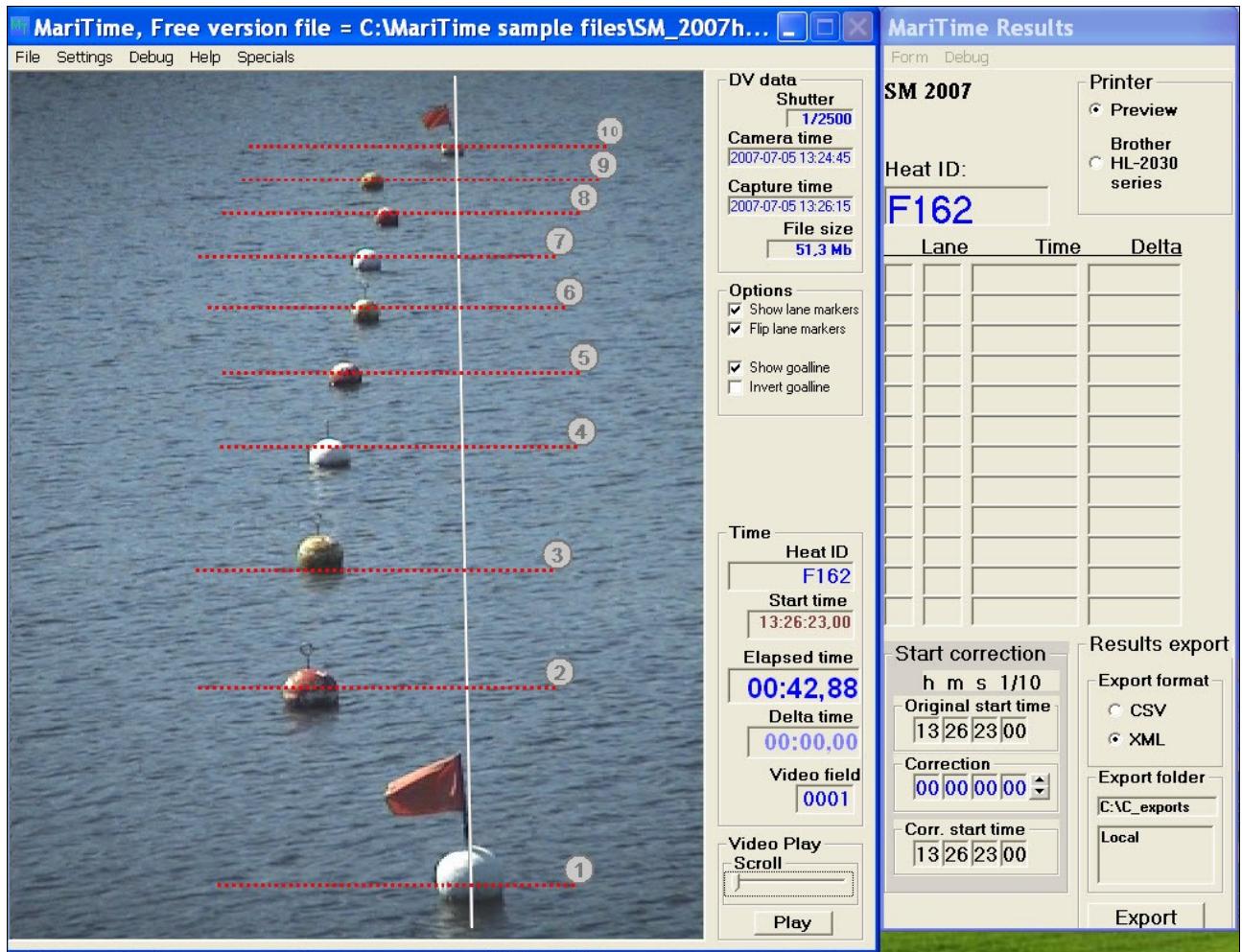
When MariTime has captured a file with video and timing information from a heat, it is time to process the file.

This processing can be performed by the same program (on the same computer) that captured the file, or the processing can take place on a separate computer.

In an actual race situation running a dual computer set-up i.e. separate front-office and back-office computers is definitely preferred.

The post-processing of a capture file does not need the full version of MariTime. — the free version is fully sufficient for this.

After opening a file for processing you are faced with two forms side-by-side:



The two forms are

- The **Playback** form
- The **Result** form

## The Playback form

The main feature on the playback form is the playback window where the video file is displayed. In the example we can see the marking buoys and the goal line but no boats (yet). This is because the capture was activated a few seconds before the first boat became visible.

To the right of the playback window is a frame marked **Time** as shown here:

The Time frame contains the following fields:

- Heat ID**: F162
- Start time**: 13:26:23,00
- Elapsed time**: 00:42,88
- Delta time**: 00:00,00
- Video field**: 0001

The field **Delta Time** is used to measure the difference between boats. If you click in the field it is set to zero. If you then advance the file you will see the **Delta time** field incrementing from zero.

On the form you can also see a frame called **Video Play**:

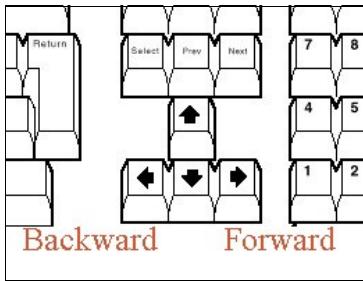


There is a **Play** button and a **scroll bar** (sometimes called a *slider*). Clicking the **Play** button will start the replay of the captured video from the beginning of the file. If not interrupted, the replay will continue until the file ends.

You will notice that the playback will be interrupted if you press any key on the keyboard or on the mouse.

By dragging the knob on the scroll bar, you can move quickly back and forth in the file.

Another practical way to view the file is to use the *arrow keys* on the keyboard. The layout of your specific keyboard may vary slightly from the following illustration:



Pressing the left arrow key will move the file *backward* in time.

Pressing the right arrow key will move the file *forward* in time.

By pressing an arrow key once, the file moves *a single frame* in the desired direction. If you keep an arrow key pressed down the movement will be continuous.

Sometimes you may want the video to play faster while keeping an arrow key pressed. This can be accomplished if you first hold down the **Ctrl** key and then press the arrow key. This will move the file in increments of 4 frames, increasing the effective speed

One thing that can lead to initial confusion is the fact that as the left arrow key moves the file backwards in time, the actual boat on the playback windows may move to the right. This obviously depends on whether the boats come in from the left or from the right.

## Elapsed time

In the **Time** frame, you can see a field named **Elapsed time**.

As you move around in the file you can see that this field changes its value. For each video frame the time changes 1/50<sup>th</sup> of a second. This means that the basic timing resolution of MariTime is 0.02 seconds<sup>1</sup>.

As will be described later on page 34, you have an opportunity to assign times with a resolution of 0.01 (1/100<sup>th</sup>) seconds.

The Elapsed time starts from 00.00.00 when MariTime gets a start signal, either from a button on the **Control Box** or via an electric signal from the starting equipment.

For a detailed description of the time display format go to page 52

## Delta Time

This field is used to show the difference in time between boats. You can use it in the following way:

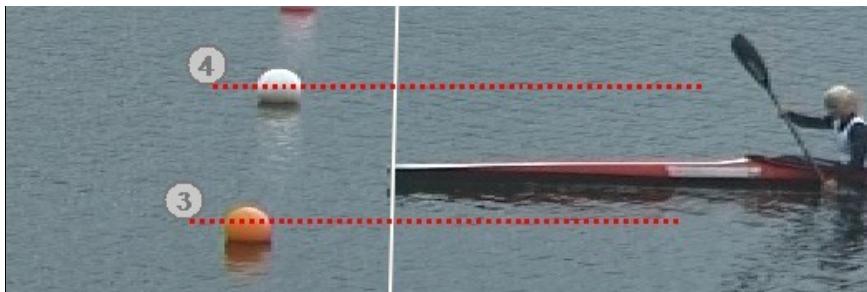
If you have positioned the file so that a boat just passes the goal line, click with the mouse pointer inside the **Delta time** field. You will notice that it changes its value to *00.00.00*. If you continue to move forward and let another boat reach the goal line, the Delta time field will show the difference in time between the two boats.

<sup>1</sup> See Appendix for a technical description of the timing resolution

## Assigning times

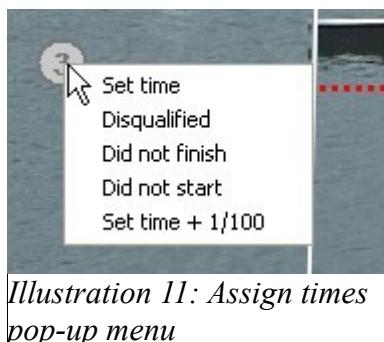
The most common task in replay mode is to scroll through the file and assign times to all the participants in the heat. A suggested way of doing this is taking these steps:

- Open the relevant file
- Press **Play**
- When the first boat approaches the goal line, press one of the arrow keys. This halts the playback. Now, use the arrow keys to position the first boat exactly on the goal line.  
The playback window will look like this:



*Illustration 10: First boat at goal line*

- With the mouse, right-click in the numbered circle for the lane (lane number 3 in this example) for this boat. This will bring up a menu as shown here:



*Illustration 11: Assign times pop-up menu*

- Select “**Set time**”

This action will assign the current **Elapsed time** to the boat in lane 3. You will notice that in the **Result form** (to the right), the result for lane 3 is immediately added to the results list.

- Continue to move through the file using the arrow keys and assign times to all the participants. In the file used for this description (Heat 54 from the Nordic Canoe Championships 2007) there were 4 boats (K4).

After all the times are assigned, the result form looks like this:

Heat ID:		NL-2000 series	
Lane		Time	Delta
1	5	00:47,38	+0,00
2	6	00:49,60	+2,22
3	3	00:50,16	+2,78
4	2	00:50,60	+3,22
5	7	00:50,92	+3,54
6	4	00:51,10	+3,72
7	1	00:52,26	+4,88
8	8	00:53,84	+6,46
9	9	00:55,74	+8,36

*Illustration 12: The result form with assigned times*

-

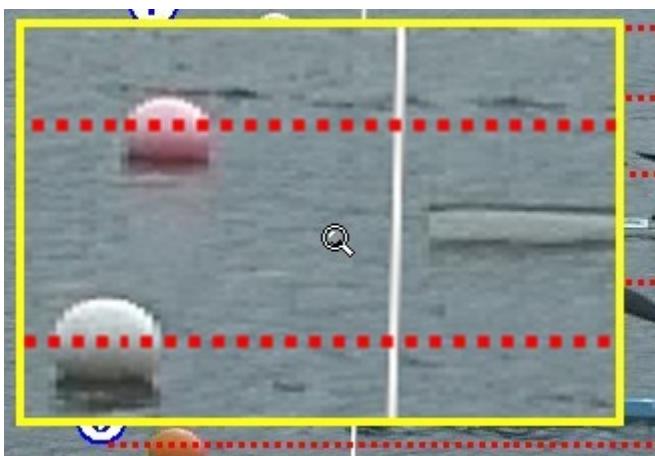
## **Zoom**

Sometimes you may want to get a more detailed view of a boat and the goal line. In such cases the *Zoom function* is useful. The zoom function can be activated in two ways:

1. Press **Ctrl-Z**
- or
2. Select **Zoom** from the **File** menu

To disable the Zoom, just press **Ctrl-Z** again.

When Zoom is activated you will see a zoom rectangle with a yellow border.



*Illustration 13: The Zoom rectangle*

This rectangle can be dragged to the desired position. Just place the mouse pointer inside the Zoom box (the mouse pointer changes to a magnifying glass) as shown above.

Hold down the mouse button and drag the Zoom box to the desired location.

The Zoom box will also be included in a printout. This feature can come in handy when documenting a “close call”.

## Additional timing functions

As you can see in the illustration above, the pull-down menu for assigning times contains several items.

**Disqualified, Did not finish** and **Did not start** are hopefully all self-explanatory.

**Set time + 1/100** has the following meaning:

The basic timing resolution of MariTime is 1/50 (0.02 seconds). This means that for each single step through the recorded file, the time increments 1/50 of a second. Normally this timing resolution is fully sufficient to separate the boats in a race, but sometimes situations occur where the basic resolution is too coarse.

As an example, look at this illustration:



Neither the first or second picture has the bow of the boat exactly on the goal line.

What you can do in a situation like this is to position the file with the boat in the first position (at time 01.46.14). At that position select **Set time + 1/100**.

This will assign the time 01:46,15.

It is also important to know that if two or more boats are assigned exactly the same time, the result list will be sorted according to the actual time-of-day when the lanes were assigned their times. The lane assigned first will be positioned first (among the group of boats with the same time) in the result list.

# Processing the results

As soon as a time is assigned (using the procedure described above), the assigned time is stored in the data file. This means that if the file is re-opened later, all the data remains in place and this will be reflected in the **Result form**.

MariTime does not handle names or other information about competitors.

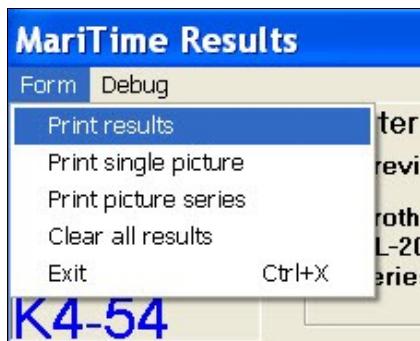
Data that MariTime handles and can report is:

- The name of the event
- The heat ID
- The time and place for each lane

The task of connecting the heat and lane data with the participants lies on the race administration system. MariTime is not such a system.

Therefore, MariTime offers a number of ways to publish and export its information.

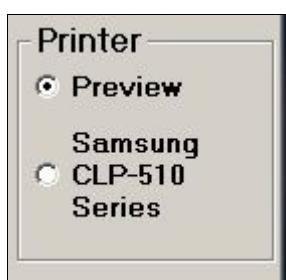
## Printouts



On the **Result form** there is a standard pull-down menu named **Form**.

When activated, it shows these menu items offering a number of printout options.

## About the printer



MariTime offers two alternative destinations for the printed output. In this frame there are two *option buttons*.

- **Preview** means that the printed output is shown on a *preview form* on the screen (and not actually printed).
- The other option button has the name of the *Default printer*.

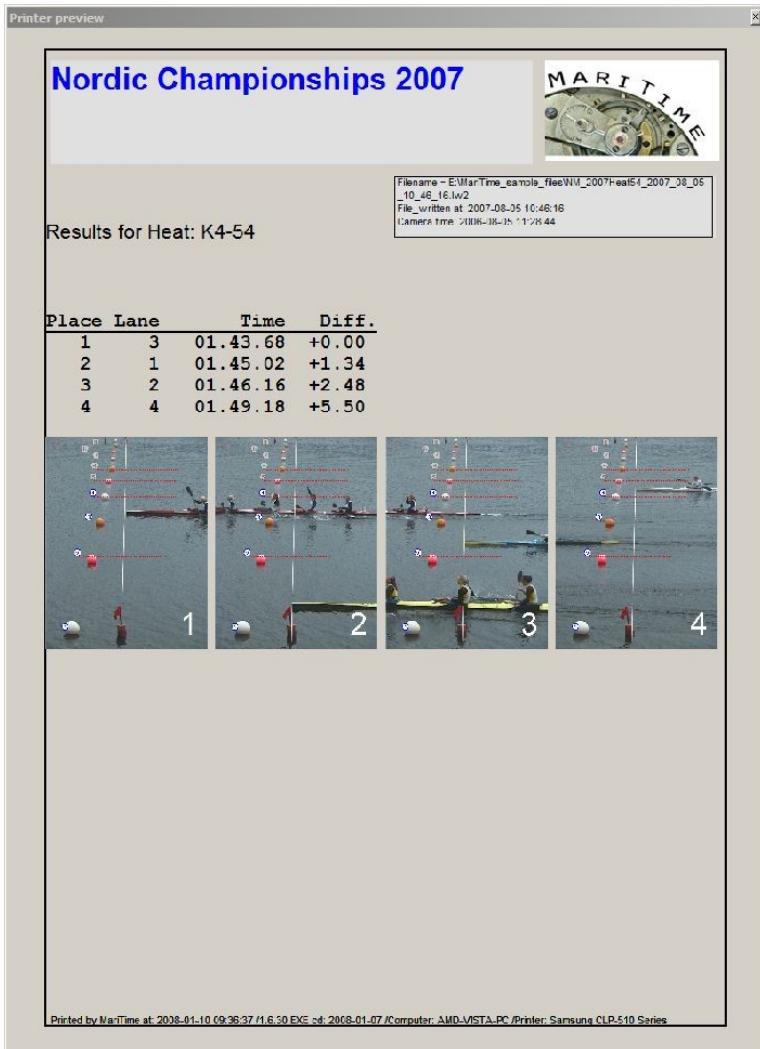
One printer is always denoted by Windows as the *Default printer*.

This printer is the one that MariTime will use.

However, for trying out the printing functions described here, starting with *preview mode* is recommended.

## Print picture series

This command will give a printout as shown here:



*Illustration 14: Picture series printout*

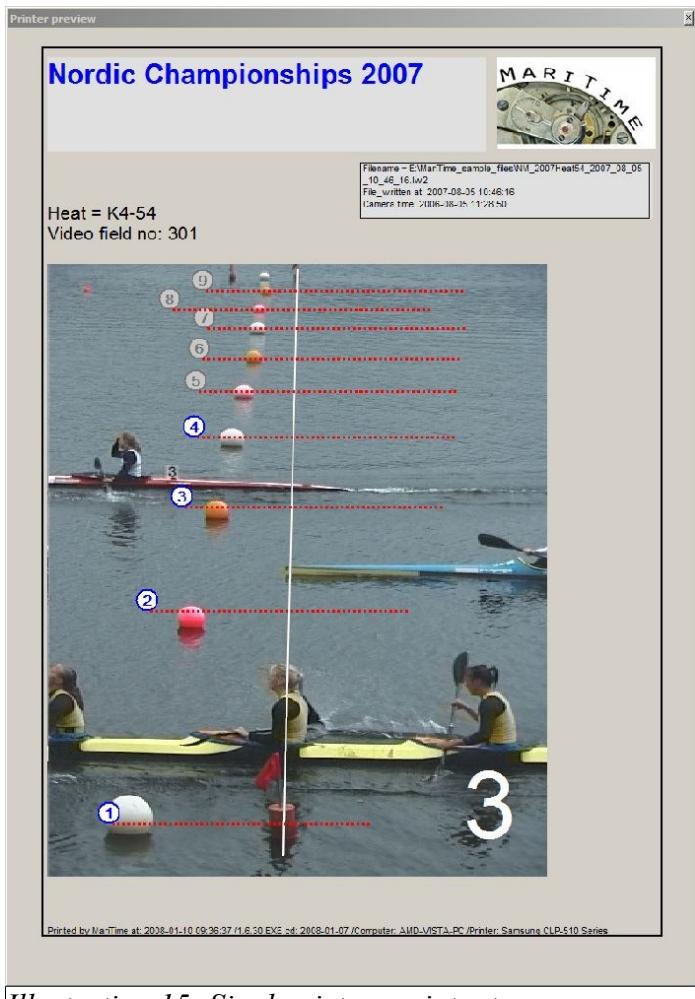
The printout contains the heat results listed in order followed by a picture of each boat as it passes the goal line.

## Print results

This will give the same printout as above but without the picture series.

## Print single picture

This command will give a printout of the current replay window:



*Illustration 15: Single picture printout*

## Event logotype

If the event has a logotype, it is possible to include this image in the printouts.

From the **Settings** menu, select **Select logo file**. This will give you a standard Windows file open menu where you can select a suitable file.



If a logo file has been selected, it will be included in the printouts replacing the event name as illustrated here:

A screenshot of a 'Printer preview' window. At the top left is a logo for 'KANOT-SM 2-7 JULI 2007' featuring a paddle and the text 'LULEÅ'. At the top right is a circular logo with the word 'MARITIME' around the perimeter and a central image of a mechanical clockwork. Below the logos is a section titled 'Results for Heat: F162'. A table lists the results for 9 lanes: Place, Lane, Time, and Diff. The results are as follows:

Place	Lane	Time	Diff.
1	5	00.47.38	+0.00
2	6	00.49.62	+2.24
3	3	00.50.18	+2.80
4	2	00.50.64	+3.26
5	7	00.50.96	+3.58
6	4	00.51.14	+3.76
7	1	00.52.26	+4.88
8	8	00.53.84	+6.46
9	9	00.55.78	+8.40

Below the results are nine small video frames showing the race from different angles, numbered 1 through 9. At the bottom of the preview window, there is a footer message: 'Printed by MariTime at: 2008-01-11 10:38:34 / 1.6.61 EXE -d: 2008-01-07 / Computer: AMD-VISTA-PC / Printer: Samsung CLP-510 Series'.

*Illustration 16: A printout with an event logotype*

## Exporting results

It is possible to print out results for each heat and hand the printed pages over to the race administration to be typed in. However, a more efficient way is available.

MariTime is capable of exporting heat data as a *file* with a predefined format. This file can then be read and “imported” by the race administration program.

For a detailed description of the export file formats, please see page 53

### How to perform result export

On the Result form you will find the *Results export* frame:



**Export format** allows you to choose from the available formats<sup>2</sup> for exporting results.

**Export folder** allows you to choose a target folder where the exported result files will be written. Clicking the upper field gives you a form for choosing/creating a folder.

Since the folder will often be a shared folder on a remote computer (running the race administration system) there is a second field where the so called *UNC* of the remote folder is displayed. Clicking the **Export** button will initiate the writing of an export file.

When finished, a message like the following is displayed:



The name of the exported result file contains the heat ID making them unique. Clicking **OK** hides the message.

A basic description on how to set up a *shared folder* can be found on page 75.

## Start time correction

On the **Result form** you will see a frame called **Start correction**

<sup>2</sup> (N.B.. If you need another format for results export, please contact me and I will try to add the format to MariTime!)

Start correction			
<b>h m s 1/10</b>			
<b>Original start time</b>			
10	46	33	00
<b>Correction</b>			
-	00	00	05
<b>Corr. start time</b>			
10	46	28	00

This function addresses the fact that the starting procedure at regatta races can at times be somewhat problematic, and the race officials can decide that a timing correction for a heat is needed.

A common start procedure is that the start pontoon is equipped with a communications radio. During the start procedure the officials in the goal house listen to the transmission and try to hear the transmitted start signal (typically a shot or a horn). The timing (either manual or electronic) is started from this audible reception.

Sometimes the start signal is lost due to radio problems or operator mistake.  
This can in turn mean that the recorded start time is wrong.

MariTime therefore offers the ability to enter a correction to the start time. This correction is stored separately in the file, meaning that the start correction itself can be changed or even deleted at will. The originally recorded times always remain unchanged.  
From the correction, all the displayed results are re-calculated .

### Performing a start time correction

All three times (Original start time /Correction/Corrected start time) have sub-fields for hours/minutes/seconds/tenths of seconds. To enter a correction you click in the the desired sub-field of **Correction**.

Let us assume that you want a correction of -5 seconds (the officials have decided that the correct start time was 5 seconds earlier than the recorded start time).

Click in the **seconds** sub-field to make it active. (turning it orange)..

By clicking at the upwards or downwards arrow you can make the wanted correction. The field *Corrected start time* and all the result fields are immediately re-calculated.

# Marathon racing

Canoe/Kayak racing comes in basically two “flavours”, namely *course racing* and *marathon racing*.

In course racing, each boat is assigned a private course and the number of participants is typically limited to about 10.

In marathon racing the number of participants can be very large, and often there are several heats of various length running simultaneously. Participants are not assigned dedicated courses.

For this reason, the functionality needed to handle marathon racing is quite different from the functionality for course racing.

The basic functionality of capturing video files and extracting timing information from them is the same, but there are also rather big differences.

For course racing, MariTime stores all the needed information in the video file for a heat.

For marathon, it is necessary to use two files. One is the video file, and the other file is a data file.

For the video files you are free to dedicate a folder for storage. For the marathon data files however, for simplicity these have a fixed location which is C:\MariTime\_Data.

When you first start to use the marathon functions, MariTime will check if this folder exists, and if not, create it. A message will be displayed about this.

In order to try out the marathon functionality, you proceed as follows (This description describes what happens the very first time you try it. Subsequent times some events will not occur).

- Start MariTime (full version) and go to the **Capture** form
- On the **Form** menu, select **Marathon**

If this is the first time you try the marathon functions, you will see this message box:



The folder needed for MariTime data files has now been created

- You will also see this message:



MariTime stores marathon data in a file called *marathon.xml*. Normally you will use an existing such file and update it with new information. However if no file is found, you will get the message above.

- You will now see the Marathon form like this:

The screenshot shows a Windows application window titled "MariTime marathon". Inside, there's a "Form" tab selected. At the top left is a text input field labeled "Name of race" containing "MariTime marathon". To its right is a digital clock displaying "10:08:07" and a "Start" button. Below this is a table with a header row "Classes" and columns "Heat", "name", "started", and "elapsed". The "name" column has a single entry "Heat 1". The "started" column shows "00:00:00" for all rows. The "elapsed" column shows "00:00:00" for all rows.

- Since we have no *marathon.xml* file, we create one:



Now with the *marathon.xml* file created we can input some data. The data that we can input is:

- The name of the race event
- The ID (often numerical) for each heat/class to be run
- The name of each heat/class to run

After we have filled in some data, the form might look like this:

The screenshot shows a software application window titled "MariTime marathon". At the top, it says "Form". Below that is a control box with "SM Marathon" and a digital clock showing "10:33:48". To the right of the clock is a "Start" button. Below the control box is a section titled "Classes" with a table. The table has columns for "Heat", "name", "started", and "elapsed". There are five rows in the table, each representing a class. The first row (Heat 1) is highlighted with a green background. The other four rows (Heats 2, 4, 5) have white backgrounds. The "name" column contains entries like "K1 3500m H14", "K1 3500m D14", etc.

Heat	name	started	elapsed
1	K1 3500m H14		
2	K1 3500m D14		
4	K1 3500m D16		
5	K1 3500m H16		

*Illustration 17: Marathon form with some heats entered*

We are now prepared for the start of the various classes. Often more than one class is started together. Then a short wait, followed by more starts.

The start time for each class is stored in the xml file. Later, when the video files are being processed, these start times will be compared to the time stamps in each video frame, and the elapsed times calculated.

To indicate start, you have a number of options:

- You can simply type in a start time (hh:mm(:ss)) in the *started* text box for a class.
- You can select the class and click the **Start** button on the form  
A class is selected by clicking in the heat ID field.  
If you hold down the **Ctrl** key you can select several classes simultaneously. Clicking in the form outside of the Heat ID will deselect all classes.
- You can press the leftmost button on the control box.

As you can see, for each started class the elapsed time field will start incrementing.

With four classes started in two groups, the display looks like this:

This screenshot shows the same software interface as Illustration 17, but with four classes started. The "started" and "elapsed" columns for these classes now contain values. The first two rows (Heats 1 and 2) have white backgrounds. The next two rows (Heats 4 and 5) have green backgrounds, indicating they are selected. The "name" column contains entries like "K1 3500m H14", "K1 3500m D14", etc.

Heat	name	started	elapsed
1	K1 3500m H14	10:35:23	00.04:44
2	K1 3500m D14	10:35:23	00.04:44
4	K1 3500m D16	10:39:51	00.00:16
5	K1 3500m H16	10:39:51	00.00:16

## Capturing video for Marathon

Capturing video for Marathon racing uses the same basic functionality as for course racing.

However, there are some differences that must be understood.

- The video files will contain goal passing sequences for many heats/classes
- The video files will normally be much larger than for course racing
- The video files do not contain any info about
  - Heats/classes
  - Start times(Such info is stored in the *marathon.xml* file)

The procedure for capturing Marathon video is as follows:

- On the Capture form, you enter a suitable file name and click New File:  
The result should look something like this:

The screenshot shows the 'Heat A' capture interface. At the top, it says 'Heat A'. Below that is a 'File name' field containing 'C:\temp\Marathon testHeatMarathon1 2008\_08\_28 11\_45\_32.lw2'. Underneath is a table with columns: 'Heat ID' (containing 'Marathon1'), 'File size' (containing '0.1mb'), 'Elapsed time' (containing '00.00.00'), and 'Start time' (containing '00.00.00'). At the bottom are buttons for 'New file', 'Start', 'Abort', and 'Finish'.

In this case, the Heat ID is really fictional and we can choose anything suitable.  
You do not need to click **Start**, since the registration of start times is done on the Marathon form.

- As boats pass the goal line you activate video capture in the normal way (switching the Capture toggle switch on the Control box)
- Eventually, you will have accumulated a rather big video file, and the display shows this:

The screenshot shows the same capture interface as before, but now the 'File size' column shows '259.1mb' instead of '0.1mb', indicating the video file has grown significantly.

You may now want to let the back-office function process the video file accumulated so far.

This can be done as follows:

- Click **Finish** for the present file
- Initiate a new file in another heat frame  
Now, we should see a display like this:

The screenshot shows the capture interface with two separate heat frames. The top frame is 'Heat A' with a file size of '259.1mb'. The bottom frame is 'Heat B' with a file size of '0.1mb'. Both frames have similar structures with 'File name' fields ('C:\temp\Marathon testHeatMarathon1 2008\_08\_28 11\_45\_32.lw2' and 'C:\temp\Marathon testHeatMarathon2 2008\_08\_28 11\_59\_11.lw2') and button sets for 'New file', 'Start', 'Abort', and 'Finish'.

You are now set to continue capturing, and the video will be stored in the new file.

The file in Heat frame A is ready to be processed by the back office computer. Heat frame A is also ready to be re-used for a third file.

# Processing Marathon files

Processing of captured video files is often done on a separate back-office computer.

This is common for both course racing and marathon.

There are a number of differences between the procedure for processing the two types:

	<b>Course racing</b>	<b>Marathon racing</b>
Files needed for processing	Only the captured video file	Both the captured video file and the <b><i>marathon.xml</i></b> file
Elapsed time calculated from	Difference between start time in video file header and the time stamps in the video frames	Difference between start time in <b><i>marathon.xml</i></b> file and the time stamps in the video frames
Results output to	The file header in the video file	Dedicated result file in xml format

To process a marathon race, you need the following input

- A video file with marathon goal passings. This file is normally copied from the front-office PC to the back-office PC in the same way as for course racing.
- The ***marathon.xml*** file containing the heats for which the processing will be done. This file should be placed in the folder “C:\MariTime\_Data” on the PC doing the processing.

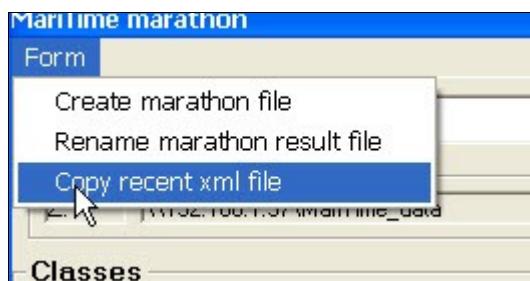
During a day of marathon racing, the ***marathon.xml*** file will be continually updated with new start times on the front-end PC. But the back-office PC frequently needs an updated copy of this file. For this reason, MariTime has a function that makes it easy to get a fresh copy over from front-office to back-office.

The procedure works as follows.

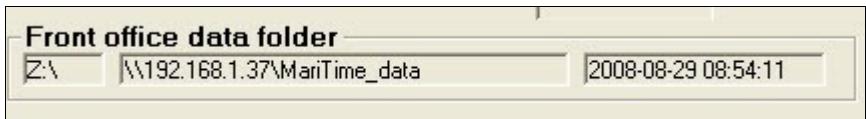
- The front-office PC shares its **MariTime\_Data** folder with read access.
- The back-office PC maps the shared folder as a network disk.  
In the Marathon form, click as shown here:



- In the “Browse for folder” form, you select the network share as shown in the example.
- Now, select **Copy recent xml file** as shown here:



- In the Front Office data folder frame you will see that the rightmost field is updated. It shows the “last modified” date for the *marathon.xml* file in the front-office PC.



- Whenever needed, you can easily get a new updated copy of the xml file from the front-office PC.

## Setting marathon times

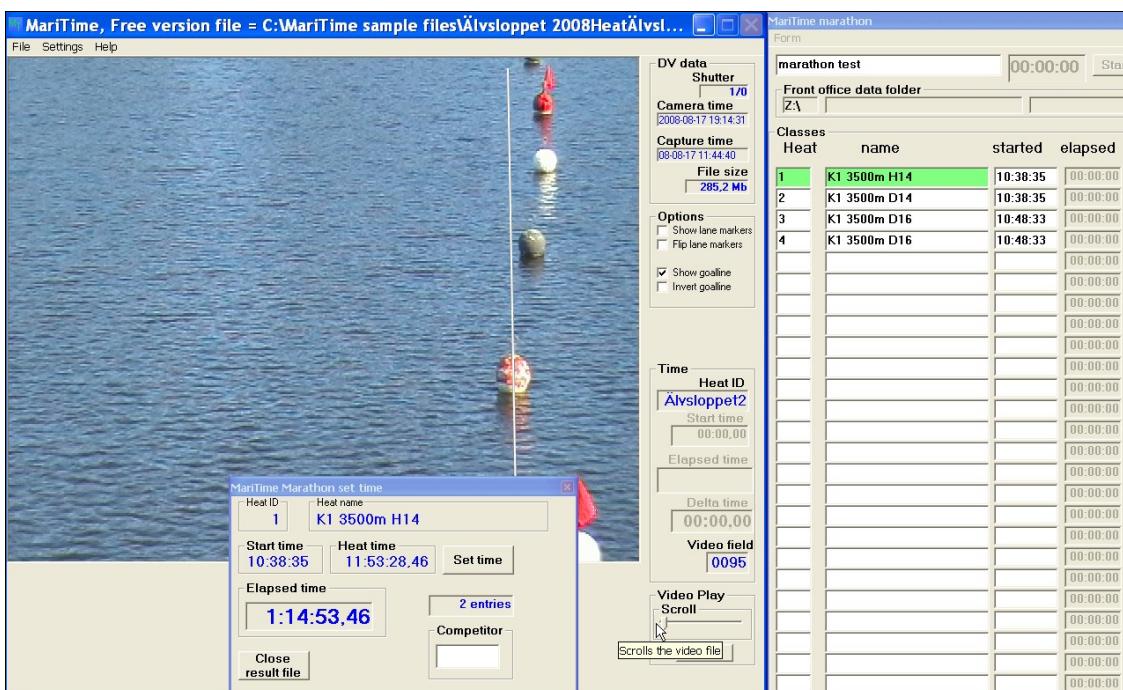
To set times for marathon, you do as follows:

- Open a relevant video file
- Select **Marathon** on the **File** menu



- Now you will have 3 active forms, namely
  - The **Player** form
  - The **Marathon** form
  - The **Marathon Set Time** form

The screen will look something like this:



The procedure for assigning times is now like this:

- Ensure that the correct heat is selected in the **Marathon form** (as indicated by color)
- Position the competitor at the goal line
- Enter the competitors number in the **Competitor** text box
- Click **Set time**



*Illustration 18: Setting the time for a marathon competitor*

- 

Each time you click **Set time**, MariTime will add a new record in the marathon result file.

By default this file has the name *C:\MariTimeMarathon\_Temp.xml*

If the result file does not exist, it is created, and the first result record is written

If the result file already exists, the result record is appended to the existing file.

When selecting Marathon as shown above, MariTime will check for the existence of a marathon results file. If one is found, this will be read into memory and all new entries will be added to it. Each time that a new result is entered the xml file is written to disk.

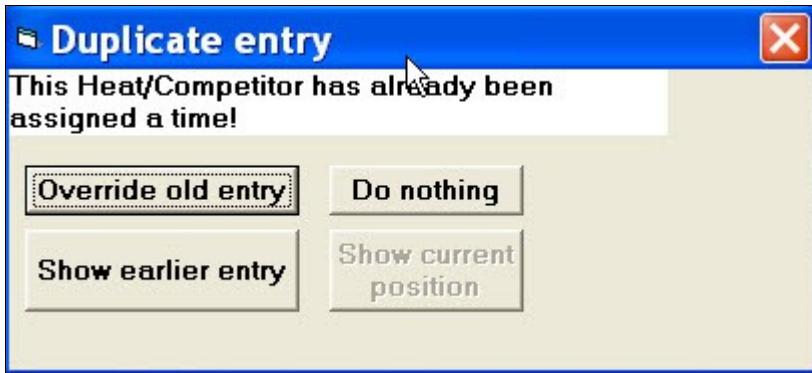
This means that if MariTime has to be restarted for any reason, no data will be lost.

As you can see in the illustration above there is a field that is continually updated with the number of result entries in the present file.

## Duplicate entries

The result file will often contain results for competitors in several heats. The operator will identify the heat/competitor from the colour and number on the number-sign. As each result is about to be stored in the results xml file, MariTime will check to see if the heat/competitor is already entered.

Since there can only be one entry for each heat/competitor, in the event of a duplicate entry, you will see the following form:



Now, the operator must try and find out the reason for the attempted duplicate entry.

If the present entry is correct, then the earlier entry for the same heat/competitor must be in error.

In order to verify this you can click the **Show earlier entry** button. This will show you the video frame for the earlier entry. **Show current position** will return to the current position in the video file. Once you have decided the reason for the attempted duplicate you can choose the desired alternative:

- **Override old entry**  
This will force the new entry to override the old erroneous entry
- **Do nothing**  
This will not enter any data, allowing you to correct the input causing the duplicate

As long as you keep adding entries to an existing file, Maritime will detect attempted duplicates.

Eventually you will reach a point when it can be a good time to close the present file and start with a new result file. A common reason for this is a desire to hand the result data over to the race administration system.

N.B. You can always hand a copy of the result file to be imported in the race administration system, even if it has not been formally closed. However, both the file name and its contents will reveal that it is a file in progress.

To close a file, you simply click the **Close result file** button. Now the following will happen.

- The file will be updated to reflect its closed status
- The file will be renamed. The name will have the following structure "*C:\MarathonResults090511092442.xml*". As you can see the file name contains a timestamp taken at the moment the file is renamed.
- A new empty result file ready for adding results is created

# Time display format

MariTime uses the **ISO 8601** standard for display of date & time.

Dates are displayed in the format YYYY-MM-DD. (Example *2010-02-18*)

YYYY = Year

MM = Month

DD = Day

Times are displayed in the format HH:MM:SS,FS (Example *1:02:43,54*)

HH = Hours

MM = Minutes

SS = Seconds

FS = Fractional seconds

# Export file formats

Presently, MariTime

*The export functionality can easily be extended with any format desired, just let us know!*

## CSV file

Please note: The file format is called **csv** (comma separated values).

However, since the new time format contains a comma sign, the file now uses the semicolon (;) as separator as illustrated here.

```
SM 2007;F162;2007-07-05 13:26:15;JOHANSUALCORE
1;6;00:49,60;+0,00
2;3;00:50,16;+0,56
3;2;00:50,60;+1,00
4;7;00:50,92;+1,32
5;4;00:51,10;+1,50
6;1;00:52,26;+2,66
7;9;00:55,74;+6,14
8;5;DSQ
9;8;DNS
10;10;DNF
end
```

The values on the first line are:

- Event name
- Heat ID (can be numeric or any string)
- Date/Time
- Name of the computer capturing the video file

The following lines are the results of the heat

- Rank (going from 1 upwards)
- Lane
- Time (MM:SS,FS) (the last two digits are second fractions)<sup>3</sup>
- Delta time (difference from the winner)

If a competitor does not get a valid time this field can be:

DSQ = Disqualified

DNS = Did not start

DNF = Did not finish

The file finishes with an “end” line

<sup>3</sup> See description of time format on page 52

## XML file

An **XML** file from the same race as above looks as follows:

```
<?xml version="1.0" encoding="utf-8"?>
<race>
    <raceinfo>
        <initiated_at>2010-02-19 15:17:06</initiated_at>
        <lastfile>True</lastfile>
        <event>SM 2007</event>
        <racetype>course</racetype>
        <capturehost>AMD-VISTA-PC</capturehost>
        <backofficehost>JOHANSUALCORE</backofficehost>
    </raceinfo>
    <heats>
        <heat
            id = "F162"
            name = ""
            start_time = "13:26:23,00"/>
    </heats>
    <results>
        <result id = "F162">
            <competitor nbr = "6">
                <elapsed_time>00:49,60</elapsed_time>
                <delta_time>+0,00</delta_time>
                <place>1</place>
            </competitor>
            <competitor nbr = "3">
                <elapsed_time>00:50,16</elapsed_time>
                <delta_time>+0,56</delta_time>
                <place>2</place>
            </competitor>
            <competitor nbr = "2">
                <elapsed_time>00:50,60</elapsed_time>
                <delta_time>+1,00</delta_time>
                <place>3</place>
            </competitor>
            <competitor nbr = "7">
                <elapsed_time>00:50,92</elapsed_time>
                <delta_time>+1,32</delta_time>
                <place>4</place>
            </competitor>
            <competitor nbr = "4">
                <elapsed_time>00:51,10</elapsed_time>
                <delta_time>+1,50</delta_time>
                <place>5</place>
            </competitor>
            <competitor nbr = "1">
```

```
    <elapsed_time>00:52,26</elapsed_time>
    <delta_time>+2,66</delta_time>
    <place>6</place>
  </competitor>
  <competitor nbr = "9">
    <elapsed_time>00:55,74</elapsed_time>
    <delta_time>+6,14</delta_time>
    <place>7</place>
  </competitor>
  <competitor nbr = "5">
    <elapsed_time>DSQ</elapsed_time>
    <place>8</place>
  </competitor>
  <competitor nbr = "8">
    <elapsed_time>DNS</elapsed_time>
    <place>9</place>
  </competitor>
  <competitor nbr = "10">
    <elapsed_time>DNF</elapsed_time>
    <place>10</place>
  </competitor>
</result>
</results>
</race>
<!--XML file containg MariTime result data for course race. Produced by :
MariTime, Free version 3.0.1 Compiled at : 2010-02-15 18:48--&gt;</pre>
```

## Marathon result file

The marathon result file is an **xml** file similar in structure to the file used for course racing. A result file for course racing always contains exactly one heat, but for marathon racing there will often be several heats reported in one result file.

Here is an example of a result file for marathon racing:

```
<?xml version="1.0" encoding="utf-8"?>
<race><raceinfo>
<initiated_at>2010-02-21 15:54:49</initiated_at>
<lastfile>true</lastfile><event>Älvsloppet 2008</event>
<racetype>marathon</racetype><capturehost>JENS</capturehost><backofficehost>JOHA
NSDUALCORE</backofficehost>
</raceinfo>
<heats>
<heat id="1" name="K1 3500m H14" start_time="10:38:35"/>
<heat id="3" name="K1 3500m D16" start_time="10:48:33"/>
<heat id="2" name="K1 3500m D14" start_time="10:38:35"/>
</heats>
<results><result id="1">
<competitor
nbr="7"><elapsed_time>1:14:56,42</elapsed_time><video_file>C:\MariTime sample
files\Älvsloppet 2008HeatÄlvsloppet2 2008_08_17
11_44_40.lw2</video_file><video_frame>0243</video_frame></competitor>
<competitor
nbr="6"><elapsed_time>1:16:05,39</elapsed_time><video_file>C:\MariTime sample
files\Älvsloppet 2008HeatÄlvsloppet2 2008_08_17
11_44_40.lw2</video_file><video_frame>0588</video_frame></competitor></result>
<result id="3">
<competitor
nbr="2"><elapsed_time>1:06:03,33</elapsed_time><video_file>C:\MariTime sample
files\Älvsloppet 2008HeatÄlvsloppet2 2008_08_17
11_44_40.lw2</video_file><video_frame>0385</video_frame></competitor></result>
<result id="2">
<competitor
nbr="7"><elapsed_time>1:16:07,17</elapsed_time><video_file>C:\MariTime sample
files\Älvsloppet 2008HeatÄlvsloppet2 2008_08_17
11_44_40.lw2</video_file><video_frame>0677</video_frame></competitor>
<competitor
nbr="6"><elapsed_time>1:17:10,74</elapsed_time><video_file>C:\MariTime sample
files\Älvsloppet 2008HeatÄlvsloppet2 2008_08_17
11_44_40.lw2</video_file><video_frame>0842</video_frame></competitor></result></
results>
</race>
<!--XML file containing MariTime result data for marathon race. Produced by :
MariTime, Free version 3.0.1 Compiled at : 2010-02-15 18:48-->
```

The example above contains 3 heats (1,2 & 3).

As can be seen, heats 1 & 2 both have 2 competitors entered while heat 3 only has 1.

In a real-life situation the number of competitors will of course be much bigger.



# Installing MariTime

MariTime is delivered as a single compressed (“zipped”) file.

The first thing to do is therefore to “unzip” this file to a suitable location.

Having done so, you will see that the distribution file contains a number of files and folders.

The most important of these are:

- **Canopus**

This folder contains a *VfW DV codec*.

A codec decompresses the data coming from the video camera.

- **MariTime\_Full\_Setup.exe**

This is the installation program that will install MariTime.

## Installing the Canopus codec

1. Open the **Canopus** folder

2. Double-click **Setup.exe**



The installation procedure will give you a number of prompts to answer:

**Installation language**, click “*OK*”

**Canopus welcome**, click “*Next*”

**Canopus license agreement**, click “*Yes*”

**Setup complete**, click “*Finish*”

Now the *Canopus VfW DV codec* (decompress only) is installed on your computer.

You will normally not have to repeat this procedure again when installing a new version of MariTime.<sup>4</sup>

---

<sup>4</sup> The latest version of the software and documentation can always be found at: <http://www.lightweightvideo.com/MariTime/?Downloads>

## Installing MariTime\_Full

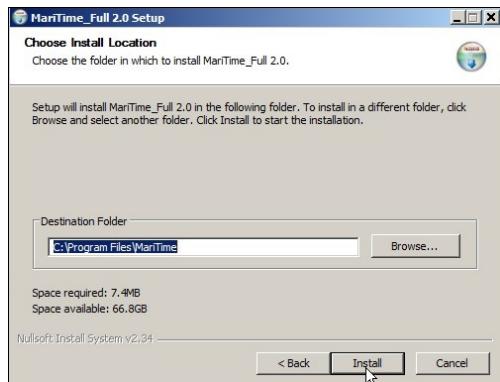
Double-click Maritime\_Full\_Setup.exe



The following form will appear:



Click **Next** to proceed with the installation.



You are recommended to accept the proposed **Destination Folder** and click **Install**.



Clicking **Finish** completes the installation

# Technical requirements

## Operating system

MariTime is developed and tested in computer environments based on *Windows Vista and Windows XP*.

No other OS:s are guaranteed to work, but it is probable that other 32-bit systems such as Windows 2000 will also work.

My *personal* experience at the time of writing this (january 2008) is that *very little* (if anything) is gained by running Vista instead of Windows/XP

The development work is being performed on Vista for the main reason that a majority of new computers sold today are being delivered with Vista pre-installed.

Given the choice, I recommend that you stay with XP for the time being.

## Hardware

There is no specific limit on hardware where Maritime will or will not work.

All recent PC:s will run MariTime without problems.

As a rule-of-thumb, the following are what should be considered reasonable requirements for running Maritime:

### PC

- **CPU:** 1 GHz or faster
- **Display:** 1280\*960 pixels minimum
- **Ram:** Full version: 1 Gbyte / Free version: 512 Mbyte
- **Disk:** 20 Gigabyte free space
- **FireWire (IEEE 1394)**  
Needed for the full version to connect the camera
- **USB/ Ethernet connections**

### Printer

MariTime will print on any Windows-compatible printer.

However, at large event the sheer volume of various printouts makes a laser printer the obvious choice.

Especially the printouts of pictures tend to take a long time (and consume lots of expensive ink) when printed on an inkjet printer.

A color printer is not necessary, but will of course look nice when printing pictures with MariTime

# In case of trouble

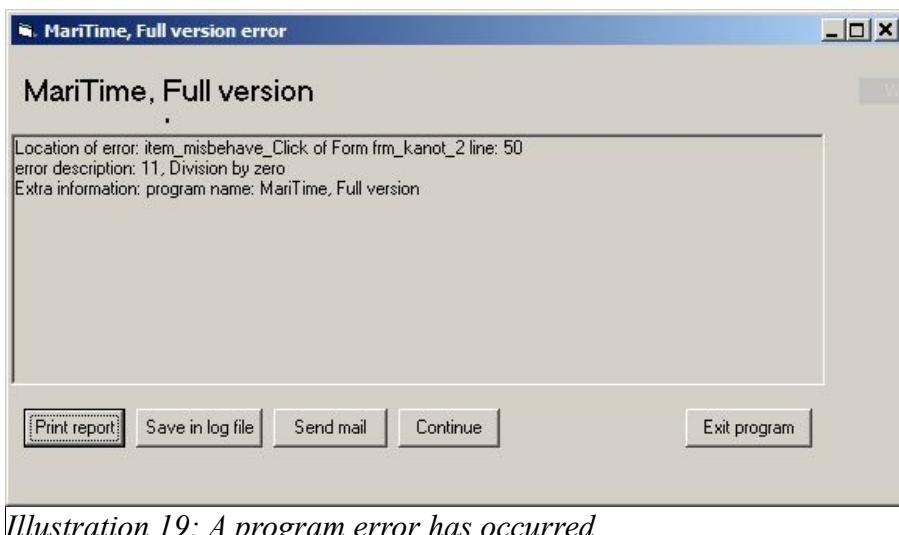
## General instructions

MariTime has been thoroughly tested during several large multi-day races and has proven itself as a reliable system.

However as with all systems of some complexity, things can go wrong.

## Software

MariTime is written in such a way that it tries to “catch” any software errors that might occur. In such an event, an error form with relevant information about the error will be displayed



As you can see there are a number of options available. If you want to report the error (which of course is desirable in the interest of program development) you have the options of

- **Printing** an error report
- **Mailing** an error report (given that the PC is connected to the Internet)
- **Saving** the error report in a log file (which can be printed or mailed later)

Of course, there is the chance that you will notice some unwanted behaviour, or perhaps you would like some specific extra functionality. In that case feel free to contact me!

# **Hardware**

## **Camera**

One area that needs extra attention is the video camera and the connection to it.

When connecting/switching on a DV camera, Windows will normally react to this event in some fashion.

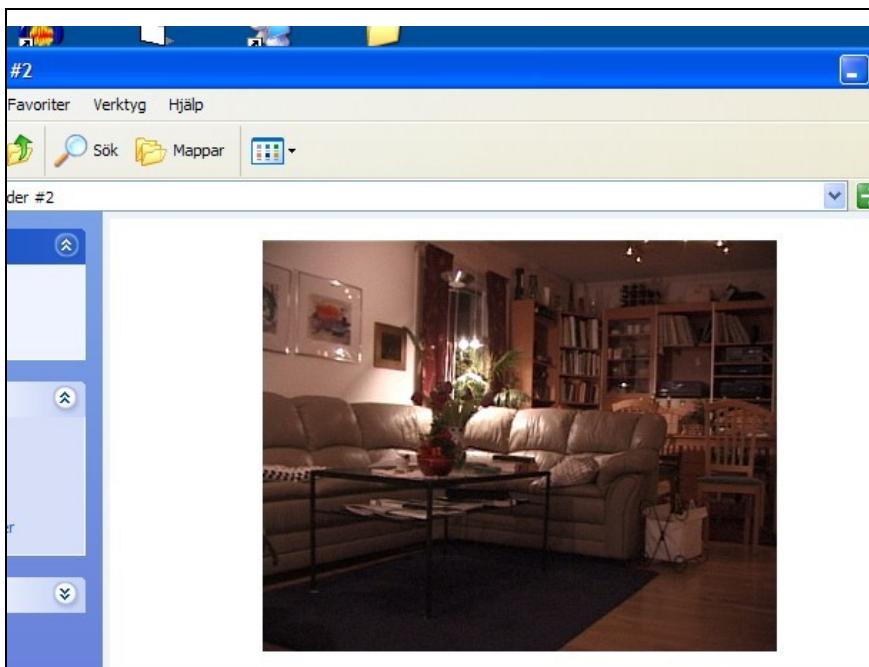
How it will react is dependant on how your version of Windows has been configured.

## **Windows XP**

When XP detects a video camera, it will show up as an icon under “My computer”.



Double-clicking this icon will activate a live preview of the video data from the camera.



*Illustration 20: Live preview from a DV camera using Windows/XP*

This is a very good method to verify that your camera is operating OK.

If this preview doesn't work, MariTime will not receive any data from the camera.

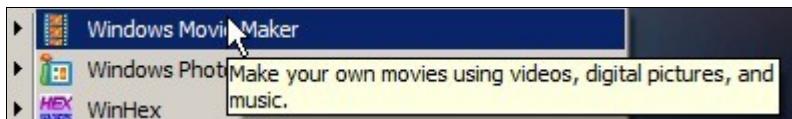
## Windows Vista

Unfortunately, Vista does not have a simple built-in DV preview function.

To verify that your DV camera is working OK you have to find another solution.

One program that is always present in a Vista installation is **Movie Maker**.

**Movie Maker** is primarily a simple video editing program, but we can also use it for our purposes.



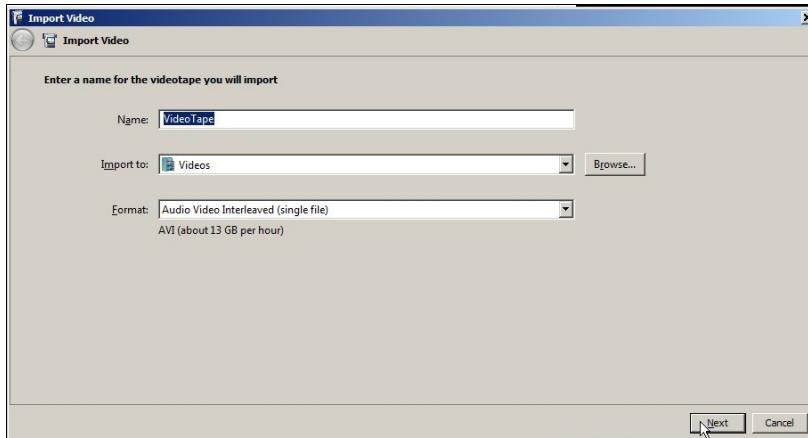
From the **Start/Programs** menu you find and launch **Windows Movie Maker**.

*Illustration 21: Starting Movie Maker*

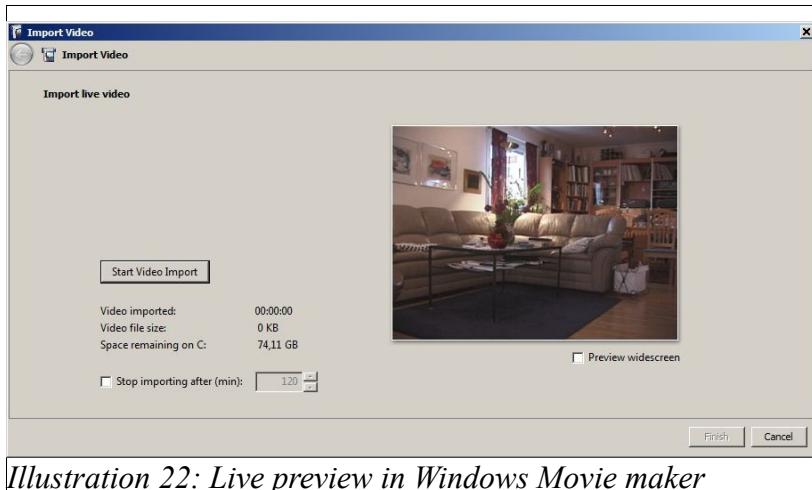


When the program has started, choose **Import from digital video camera**.

This will bring up the following form:



On this form click **Next**, and you will have a live preview from the camera!



*Illustration 22: Live preview in Windows Movie maker*

If you fail to get a live preview, this is an indication of some basic technical problem with the camera or its connection that needs to be fixed.

## **If the camera still doesn't work**

The most common source of trouble is the FireWire cable.

Cables are easily available in PC stores, and it can be a good idea to just try another one.

If the problem is not with the cable, a good method is to try different combinations of camera, cable and PC to try and isolate the problem.

# Configuring the DV camera

MariTime uses a standard video camera of the type called *mini-DV*.



*Illustration 23: Examples of DV cameras*

Today a new breed of consumer video cameras are entering the market.  
Among the characteristics of these cameras are

HDV (High definition)

DVD recording

Please stay away from these!

Chances are that these cameras will not be suited for operation with MariTime.

You should buy a simple standard mini-DV camcorder!

## FireWire out

*FireWire out* is a feature that is mandatory for using a camera with MariTime!

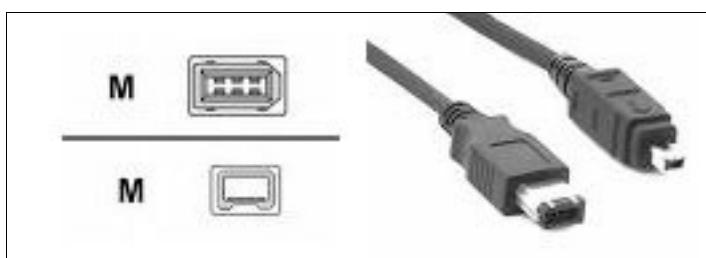


Almost all DV camcorders have a FireWire port as shown here.

Through this port, the camcorder continually sends out digital video data.  
The camera may also have the *DV in* option, but this is not needed for  
MariTime (it poses no problems if present)

## About FireWire ports:

FireWire ports come in two different types, 4-pin and 6-pin.



- Camcorders always have the small 4-pin type.
- Computers can have either the small 4-pin or the larger 6-pin type.

To get the system to work properly, you need to have the proper FireWire cable. The most common FireWire cable has a 4-pin connector in one end and a 6-pin connector at the other end as shown here.



*Illustration 24: 6-4 FireWire cable*

FireWire cables are available in all possible combinations of connectors and lengths. MariTime is delivered with a special 10 meter 4pin ↔ 6pin FireWire cable.

If the supplied cable is not compatible with the available FireWire ports, a range of converters/adapters are available to solve this problem.



*Illustration 25: FireWire adapters*

## About firewire cable lengths

The formal specification for FireWire defines the maximum length as *4,5 meters*. It is well known however, that with a well-designed cable, 10 meters between a DV camera and PC is no problem. In a race set-up 4,5 meters is often too short, and therefore MariTime is delivered with a tested 10 meter cable. Sometimes even 10 meters can be too short, and I would like to offer some information about the possibility to run longer FireWire connections.

Given the right equipment even hundreds of meters can be attained. For the longest possible connections you can buy a pair of optical repeaters. These repeaters use a fibre-optic cable. If your needs are in the 10 – 30 meter range, there are other simpler and cheaper solutions.

- There are some companies that offer 20 meter cables.
- Several companies offer various kind of FireWire repeaters. These repeaters all have a small amplifier in them that will add another 10 meter cable. Several such repeaters/cables can be connected in series.

## **FireWire type 2**

DV camcorders all use FireWire type 1.

There also exists a newer (and faster) version of FireWire called type 2.

It uses a different set of connectors.

Stay away from this!

All you need for MariTime operation is type 1!

# Camera settings

A vast majority of all DV cameras operate in the “full auto” mode since this is the default setting.

This may be fine for most home video applications, but if you want to use your DV camera for a special purpose like MariTime, you can get much better results by setting up some of the camera functions manually.

Please note that these settings are done differently for different cameras.

You may need to consult the manual for your specific camera and learn how to perform these settings.

Running in “full auto” camera mode will lead to *unsatisfactory results* in when using MariTime.

These are the settings that you need to perform:

- **Turn off “demo mode”**

Many DV consumer cameras enter a demo mode when left switched on for some time. This may well occur with MariTime, since the camera will be running for hours with no tape inserted.

- **No auto focus**

MariTime works best with *manual focus* selected.

A drop of water or a dust particle on the lens can otherwise cause the camera to start “hunting” for focus, with the picture repeatedly going in and out of focus

- **Manual shutter**

In auto mode, a camcorder will often use a fairly long shutter time, typically 1/25 .  
MariTime works best with a short shutter time such as 1/500.

Outside in daylight there is normally enough light to allow the camera to use very short shutter times.

Some cameras have a function to manually set the shutter time within a range of specific values. Other cameras only have various “modes” to chose from.

If your camera offers different modes, you should set the camera to *sports mode* since this seems to give the shortest shutter time.

If given a choice, go for a camera with a true function for setting the shutter time. Even some of the cheapest cameras have this feature.

- **Disable “anti shake” (optional)**

Almost all consumer DV cameras have a function for stabilizing the picture.

When using the camera for MariTime it will be fixed on a tripod, and therefore you should disable the stabilizing function. In many cases this will lead to an improvement in picture quality.

## Leave the camera switched on

After successfully installing and setting up the camera, you are strongly recommended to leave it switched on for the entire duration of the race! Since the camera has no tape inserted there are no mechanical parts active. Experience shows that the camera can remain switched on for weeks

without harm.

There is also one other aspect to consider: After being switched off for some time, some camera models seem to “forget” their settings and revert to the default values. If this goes unnoticed it will result in bad quality video, and also means that the process of setting the camera parameters will have to be repeated.

## Other aspects

- **Use a polarizing filter**

MariTime will be used near water and (hopefully) in sunny conditions.

This can sometimes lead to difficult light reflections.

Using a polarized filter can remove much of this problem and improve the picture quality.

- **Arrange weather protection**

If the camera is placed outdoors it needs protection from the elements.

Moisture is not good for delicate electronic equipment like a video camera. A tempting solution is to wrap the camera in a simple plastic bag. While keeping the rain out, this method has a major drawback in that the camera will not be properly ventilated.

The camera can get hot enough to cause a malfunction.

A better method for weather protection is to arrange for a ventilated and weatherproof cover.

### Grounded power outlet!!

N.B. Please read the following and take the needed precautions!

When connecting a PC to a DV camcorder it is imperative that the PC is connected to a grounded outlet!

The reason behind this is that the construction of a PC is such that if the PC is ungrounded, half of the nominal power voltage (e.g. 220/2 volt = 110 volt) may be present on the PC chassis.

The voltage has what in technical terms is called "*a high internal resistance*", meaning that it is not harmful to people (but you can feel a "tickle"), but there is a high probability that the voltage will cause damage to equipment connected to the PC. Experience shows that the FireWire interface used for video cameras is especially susceptible to this kind of problem.

Therefore: ***always connect the PC to a grounded power outlet.***

# **Establishing a Local Area Network (LAN)**

Often there will be more than one computer in operation at an event.

MariTime will normally be running on two computers.

A third computer may be running the race administration system.

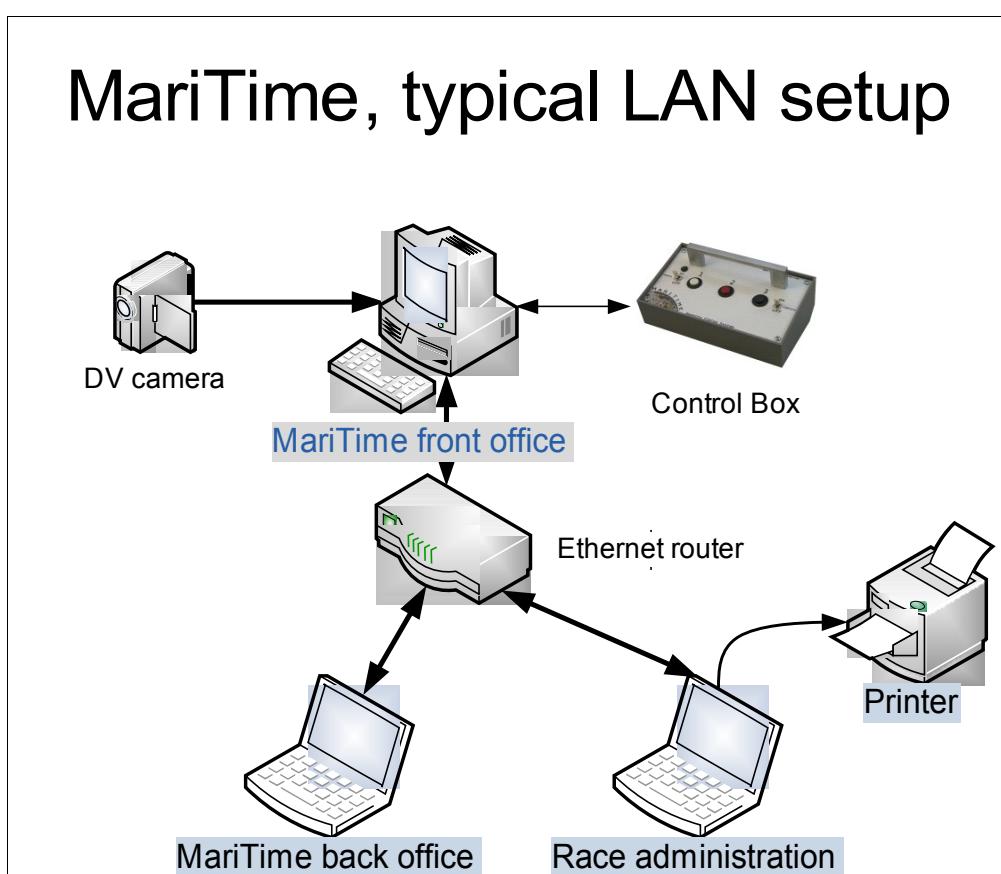
This means that a LAN will have to be established. Establishing a LAN is a task that can be divided into two major steps:

1. The physical network
2. Configuring the computers

## **The physical network.**

Two computers can be connected via a simple cable. If the number of computers is three or more, some kind of network hardware must be used. Such hardware is very cheap these days and is readily available wherever computers are sold.

The computers are connected in a star configuration (each computer is connected via a separate cable). In the centre of the star, you place an ethernet switch or a router.



## **Beware of WLAN**

Today it is becoming increasingly popular to build wireless networks with a technology called *WLAN*.

A WLAN network is often practical for sharing a common resource such as an Internet connection. Experience shows that the performance on a WLAN network can be very limited when it comes to communications between computers on the WLAN.

The reliability of a WLAN is also such that the established network shares tend to fail after some time.

If you intend to use a WLAN you are recommended to verify that you can achieve the communications speed needed.

To summarize: The LAN needed for a race should be established using cable!

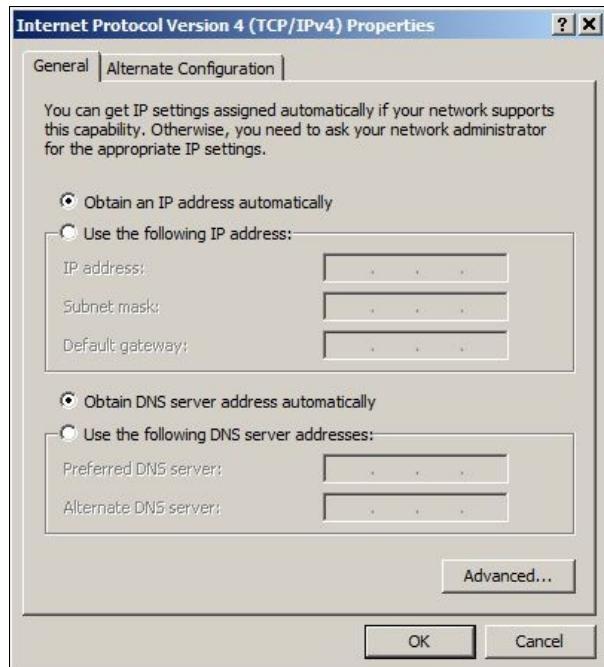
## Configuring the computers

Within the LAN each computer must have its own unique IP address.

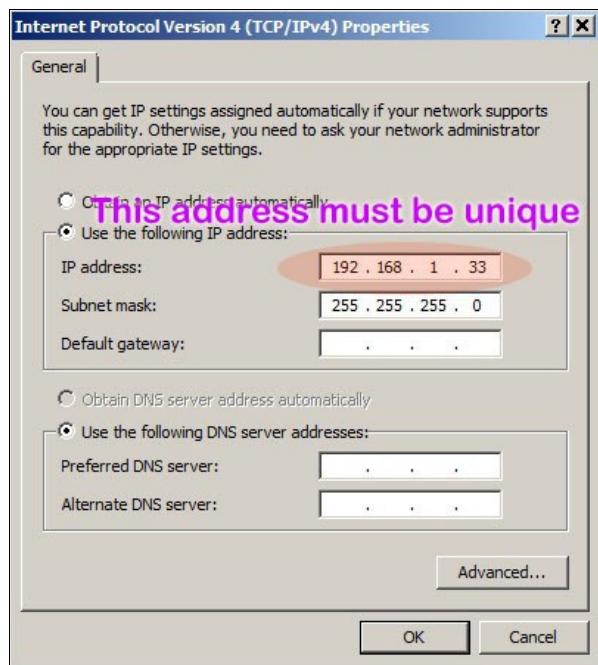
If the LAN is built around an Ethernet *switch*, the assignment of addresses must be made *manually*.

If a *router* is used, the router will often have a functionality called DHCP.

If so, the router will assign a unique address to each connected computer.



If a *DHCP capable router* is used, this is how the computers should be configured

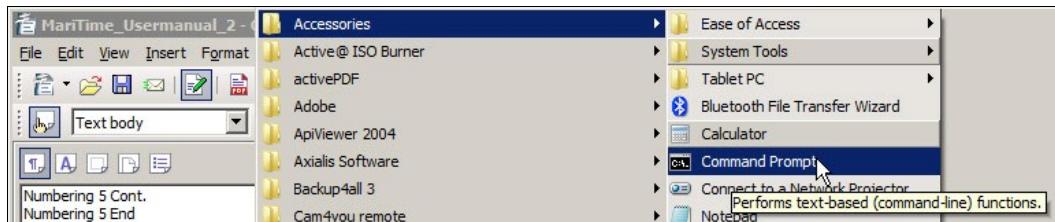


If you are using a *switch*, all the computers must have their addresses configured manually. Here is an example of how this could look:

## Finding out your IP address.

Often you will want to know the IP address assigned to a specific computer.  
There are several ways of doing this:

1. From the **Accessories** section in the **Programs** menu, select the **Command prompt**:



In the Command prompt type **ipconfig** (followed by **enter**).

This will give you the IP address :

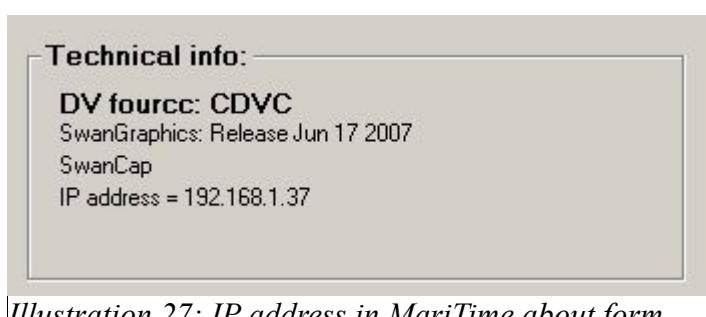
```
C:\>Users\Johan>ipconfig
Windows IP Configuration

Wireless LAN adapter Wireless Network Connection 3:
  Connection-specific DNS Suffix . . . . . : fe80::80b0:4b89:7213:44fa%15
  Link-local IPv6 Address . . . . . : 192.168.1.37
  IPv4 Address . . . . . : 192.168.1.37
  Subnet Mask . . . . . : 255.255.255.0
  Default Gateway . . . . . : 192.168.1.1
```

*Illustration 26: IP address from the Command prompt*

2. Select **Help/About** in MariTime.

In the **MariTime About** screen technical info, you can see the IP address of the computer:



*Illustration 27: IP address in MariTime about form*

# Sharing folders

## Data flow

At an event, the typical flow of data is as follows:

- The MariTime front office computer captures video/timing files for each heat and stores them on its local hard drive.
- When a heat finishes, the MariTime back office computer copies the most recent file from the front-office computer to its local hard drive
- When the processing of a heat is finished, the MariTime back-office computer exports the results to the hard disk on the race administration computer.

To enable this flow, two *shared folders* are established.

- The MariTime front office computer shares its capture folder with read access.
- The race administration computer shares a folder with write access

## Marathon racing

For marathon racing both the video files and the *marathon.xml* file needs to be transferred from front-office to back-office.

## An example of establishing shared folders

Let us assume that on the front-office computer running MariTime, there is a folder named *MariTimeCaptures*. (You are of course at liberty to assign any name within the Windows naming conventions for your folders). In this folder, all the captured files for the day are stored. This captured folder must be shared.



1. Right-click on the folder you want to share and select **Sharing and security**.

2. On the form that appears, activate sharing like this:

Please note that there is no need to allow network users to change the captured files, only read/copy access is needed.

## Mapping a shared folder

Now that a shared folder is established, it is time to assure that it can be accessed from the back-end computer.

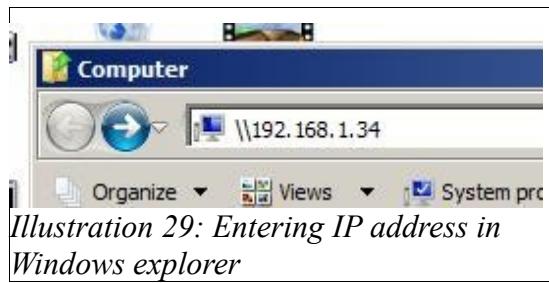
This can be done in the following way:

1. Determine the IP address of the front-office computer (the method of doing this is described earlier in this manual).
2. On the back-office computer, open a *Windows explorer* window (easily done by pressing the **Windows** key together with the **E** key



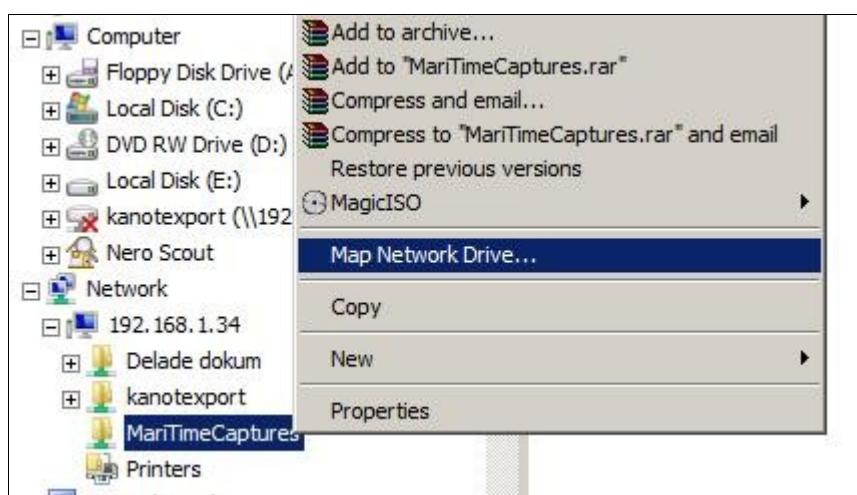
*Illustration 28:  
The Windows key*

3. In the explorer window that appears, type the address of the computer with the shared folder :

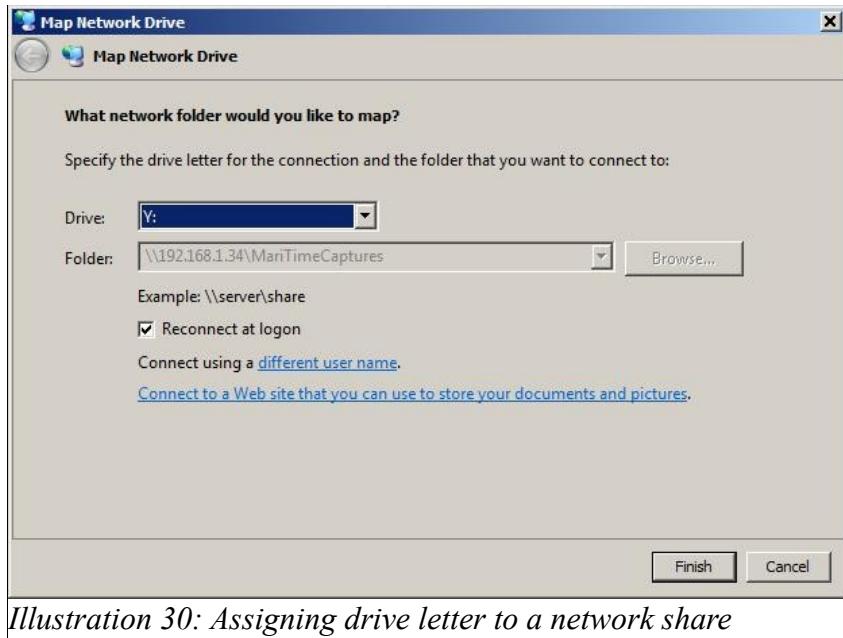


*Illustration 29: Entering IP address in  
Windows explorer*

4. In the left part of the explorer form you will see the shared resources on the front-office computer. Select **Map Network Drive**

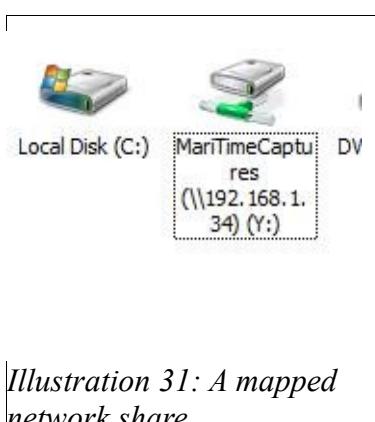


5. This will bring up a form where you can chose a drive letter for the shared folder



*Illustration 30: Assigning drive letter to a network share*

6. After clicking **Finish**, you will notice that the shared network drive appears alongside other drives in your computer:

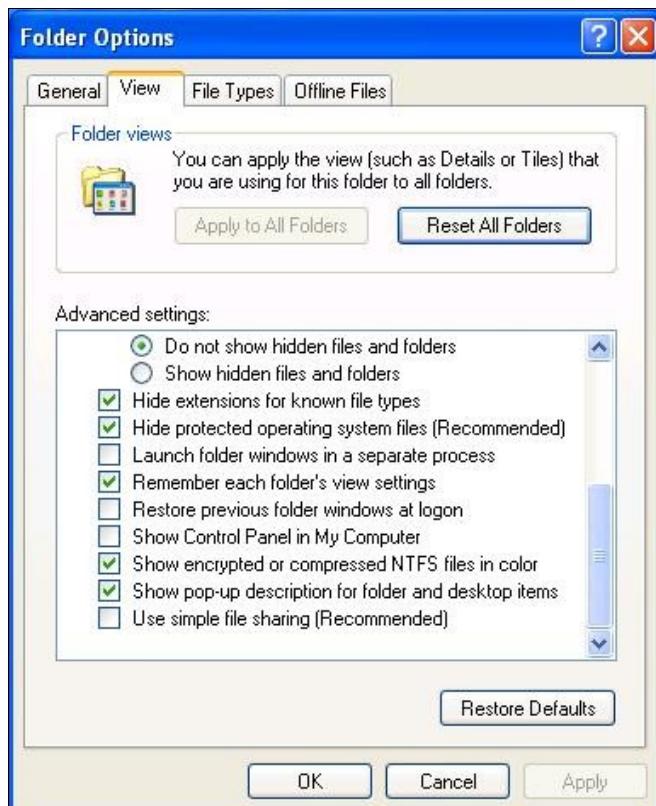


*Illustration 31: A mapped network share*

## Simple file share

It is important to know that Windows has two different modes of file sharing.

If you open **Folder options** in the **Control Panel** and go to the bottom of the list for the **View** tab, you will see a check box named *Use simple file sharing* :



If this box is checked you are using the simple version of file sharing, and the instructions above should be valid.

If for some reason (such as the computer being member of a domain) simple file sharing is not used, there are some things to consider:

1. You must ensure that all users really have access to the folder and its contents.  
Right-click the shared folder and select **Properties/Security**.  
Add a user *Everyone*, and assign permissions as shown here:



2. Also note that with simple file sharing disabled, the form for configuration of sharing changes its appearance to the following:



Windows networking is a discipline of its own. For in-depth knowledge there are lots of resources available on the Internet. This section of the manual is only an attempt to give a brief introduction on how to configure a Windows network suitable for operating MariTime.

## **Copying MariTime files**

Once the process of sharing folders and mapping them is completed, the copying of files from front-office to back-office computer is simple.

One easy way is to simply have two folders open on the desktop and drag the files to be copied from the source to the destination.

## Notes

## Notes

## Notes

## Notes