

arrowmatcher 3

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Chapter 1

Install

1.1 Requirements

The current Version need the qt Toolkit from <http://qt.nokia.com/>, the required Version is 4.3 or higher.
optional:

Gnuplot (<http://www.gnuplot.info/>), if Gnuplot is not in PATH, you can set the path to Gnuplot: "Edit" -> "Preferences"

1.2 Windows: Executable

Download the [zip-Archive](#) from the Windows folder.

Extract it in a folder.

Doubleclick the Executable file (.exe) in Filemanager or somewhat.

1.3 Windows: build from Source

if you have troubles to install the Qt toolkit, please read: "[installation of Qt for Windows](#)".

Download the newest arrowmatcher Package: <http://sourceforge.net/projects/arrowmatcher/files/>. Unpack it in a Directory.

Please read "[Windows](#)".

1.4 Linux: precompiled binary

I have build some precompiled Packages, which are easy to install:

➔ **Linux Packages**

To run arrowmacher from a terminal:

```
1 arrowmatcher2
```

1.5 Linux: build from Source

"unpack":

```
1 tar -xzf arrowmatcher2-<version>.tar.gz
```

change in the new directory:

```
1 cd arrowmatcher2-<version>
```

set the path (if necessary):

```
1 export QTDIR=/usr/local/Trolltech/Qt-4.x
2 export PATH=$QTDIR/bin:$PATH
```

build arrowmatcher:

```
1 qmake -makefile arrowmatcher2.pro
2 make
```

Start:

```
1 ./src/release/arrowmatcher2
```

1.6 Mac OS

XCode is required. It is not installed by default, so you can install it from the install DVD, or download from web.

start the Terminal:

```
1 cd Downloads/arrowmatcher2-3.0.0
```

compile the ballistic library:

```
1 qmake -spec macx-g++ arrowmatcher2.pro
2 make
```

change to the directory where the new executable lives:

```
1 cd src/debug
```

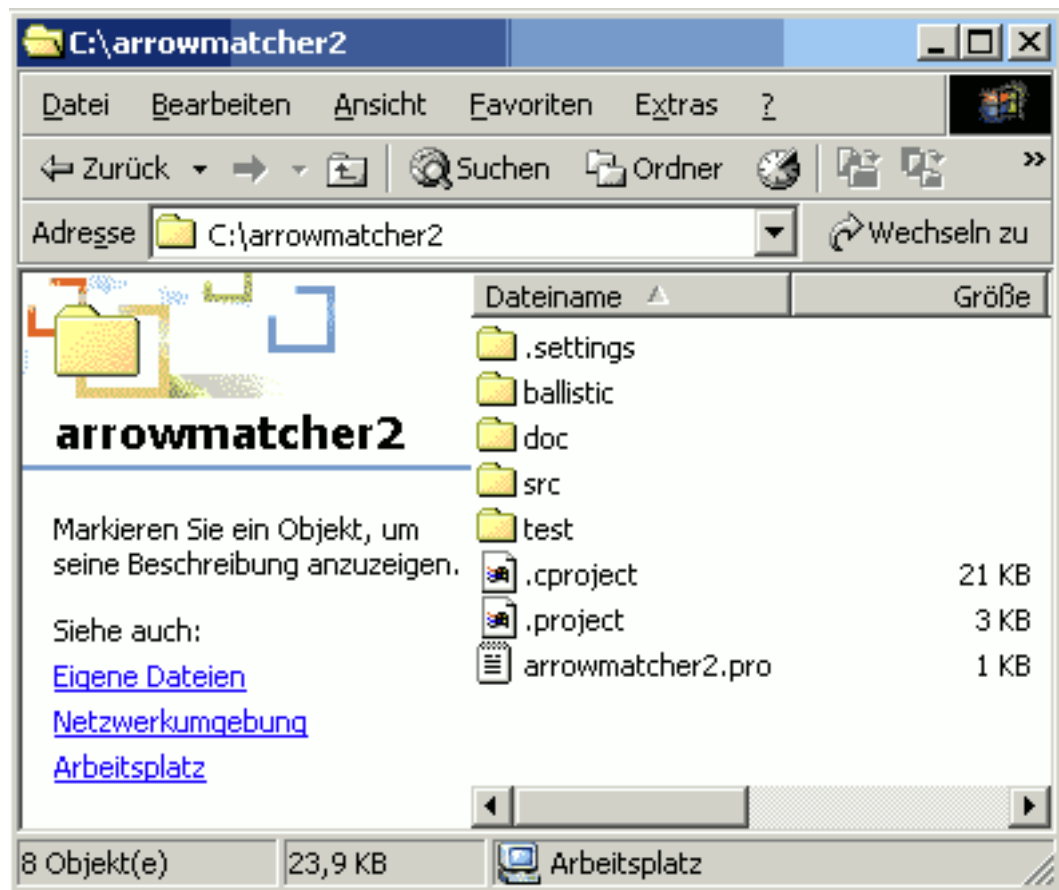
Start:

```
1 arrowmatcher2.app/Contents/MacOS/arrowmatcher2
```

1.7 Windows

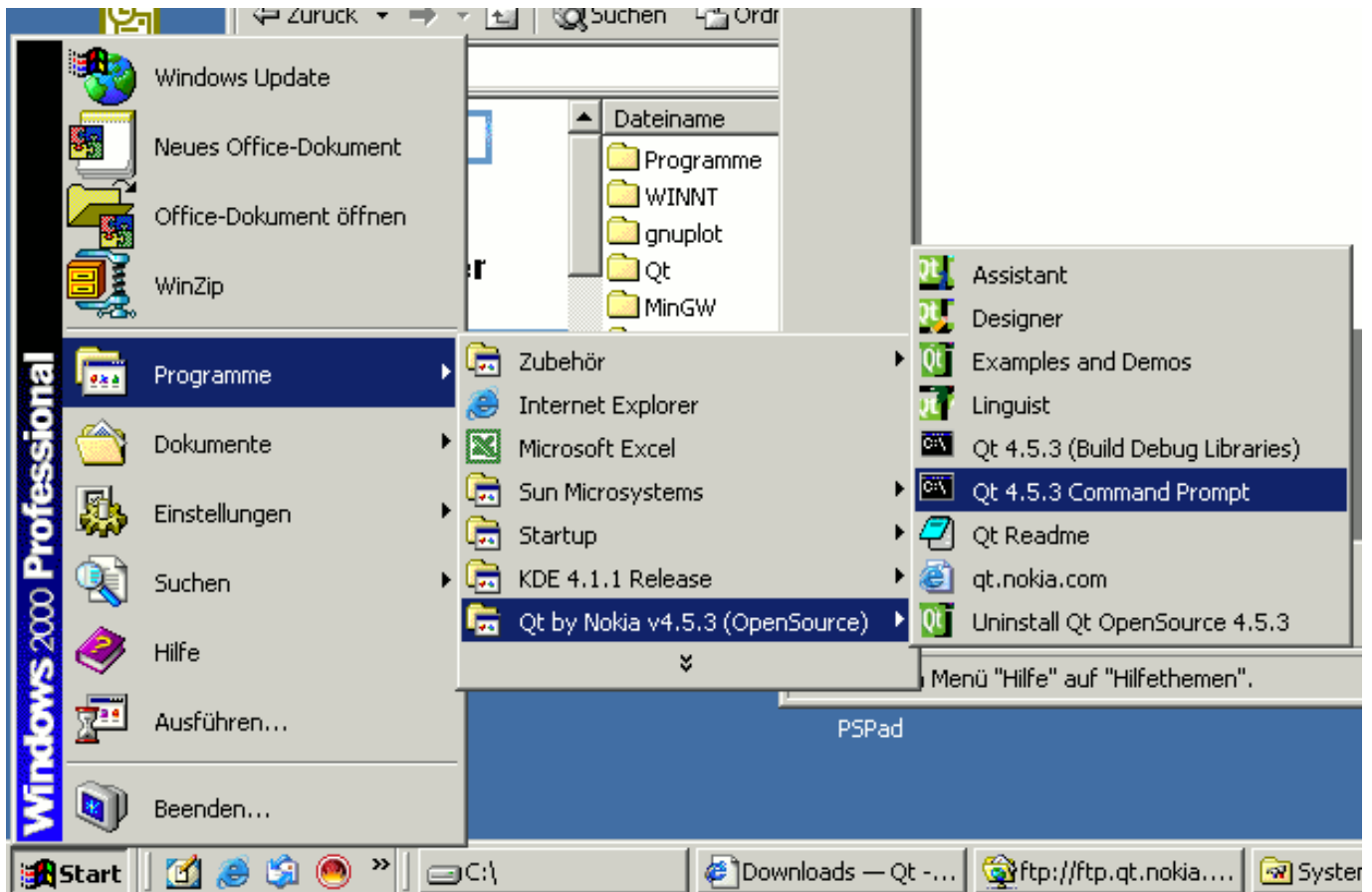
1.7.1 Foldertree

After extract the archive, you should have a folder structure as shown in the picture.



1.7.2 Qt Command Prompt

Start the Qt Command Prompt: Start -> Programme -> Qt by Trolltech v4.x (Open Source) -> Qt 4.x Command Prompt

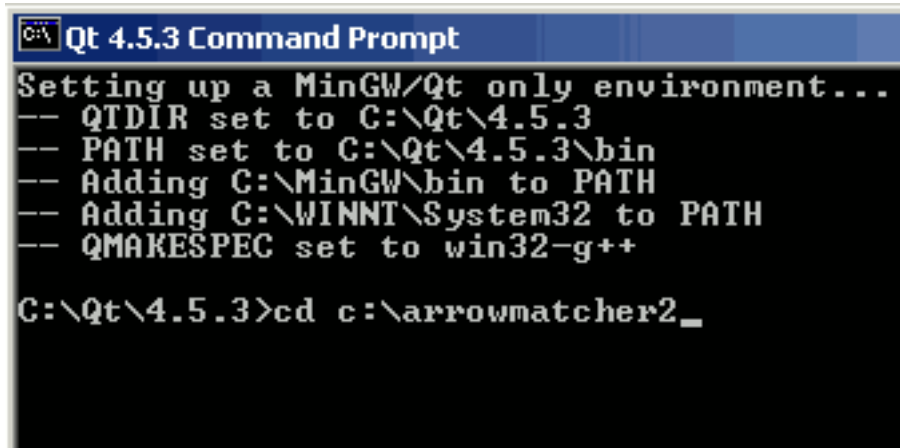


```
Auswählen Qt 4.5.3 Command Prompt
Setting up a MinGW/Qt only environment...
-- QTDIR set to C:\Qt\4.5.3
-- PATH set to C:\Qt\4.5.3\bin
-- Adding C:\MinGW\bin to PATH
-- Adding C:\WINNT\System32 to PATH
-- QMAKESPEC set to win32-g++
C:\Qt\4.5.3>_
```

1.7.3 jump the the root folder of arrowmatcher

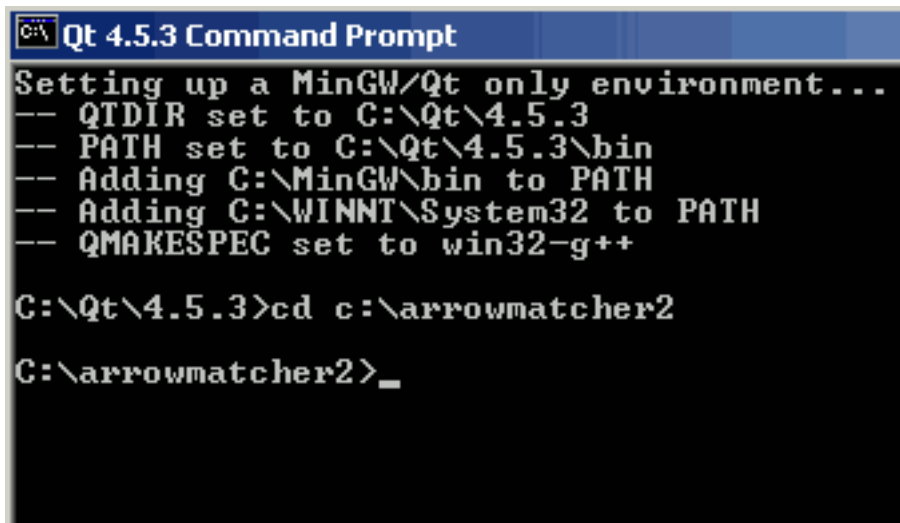
Type the following command to the command prompt to change to the root directory of the extracted archive:

```
cd c:\arrowmatcher2
```

A screenshot of a Windows Command Prompt window titled "Qt 4.5.3 Command Prompt". The window has a blue title bar and a black background with white text. The text inside shows the setup of a MinGW/Qt environment, including setting QTDIR, PATH, and QMAKESPEC. The current directory is set to c:\arrowmatcher2_.

```
C:\> Qt 4.5.3 Command Prompt
Setting up a MinGW/Qt only environment...
-- QTDIR set to C:\Qt\4.5.3
-- PATH set to C:\Qt\4.5.3\bin
-- Adding C:\MinGW\bin to PATH
-- Adding C:\WINNT\System32 to PATH
-- QMAKESPEC set to win32-g++

C:\Qt\4.5.3>cd c:\arrowmatcher2_
```

A second screenshot of the same Qt 4.5.3 Command Prompt window. The text is identical to the first screenshot, but the prompt now shows the user has entered 'cd c:\arrowmatcher2' and the prompt has moved to c:\arrowmatcher2>_.

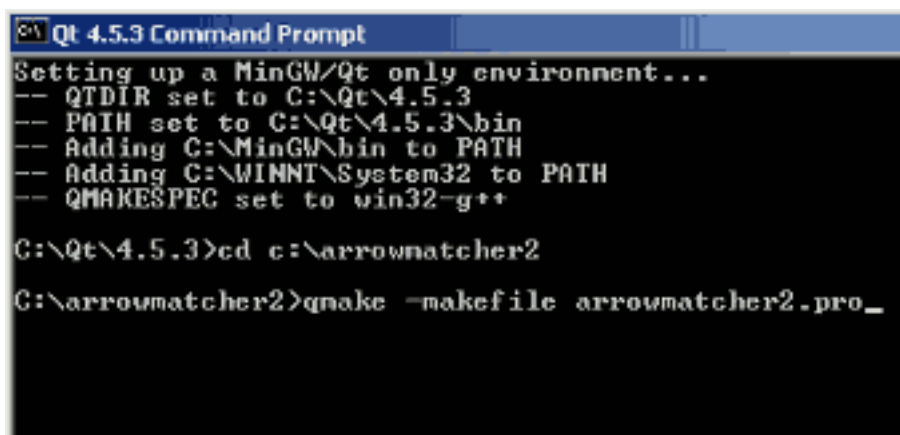
```
C:\> Qt 4.5.3 Command Prompt
Setting up a MinGW/Qt only environment...
-- QTDIR set to C:\Qt\4.5.3
-- PATH set to C:\Qt\4.5.3\bin
-- Adding C:\MinGW\bin to PATH
-- Adding C:\WINNT\System32 to PATH
-- QMAKESPEC set to win32-g++

C:\Qt\4.5.3>cd c:\arrowmatcher2
C:\arrowmatcher2>_
```

1.7.4 build arrowmatcher

to build the application type the following 2 commands to the command prompt:

```
1 qmake -makefile arrowmatcher2.pro
2 make
```

A third screenshot of the Qt 4.5.3 Command Prompt window. The text is identical to the previous screenshots, but the prompt now shows the user has entered 'qmake -makefile arrowmatcher2.pro' and the prompt has moved to c:\arrowmatcher2>_.

```
C:\> Qt 4.5.3 Command Prompt
Setting up a MinGW/Qt only environment...
-- QTDIR set to C:\Qt\4.5.3
-- PATH set to C:\Qt\4.5.3\bin
-- Adding C:\MinGW\bin to PATH
-- Adding C:\WINNT\System32 to PATH
-- QMAKESPEC set to win32-g++

C:\Qt\4.5.3>cd c:\arrowmatcher2
C:\arrowmatcher2>qmake -makefile arrowmatcher2.pro_
```

```
Qt 4.5.3 Command Prompt
Setting up a MinGW/Qt only environment...
-- QTDIR set to C:\Qt\4.5.3
-- PATH set to C:\Qt\4.5.3\bin
-- Adding C:\MinGW\bin to PATH
-- Adding C:\WINNT\System32 to PATH
-- QMAKESPEC set to win32-g++

C:\Qt\4.5.3>cd c:\arrowmatcher2

C:\arrowmatcher2>qmake -makefile arrowmatcher2.pro

C:\arrowmatcher2>
```

```
Qt 4.5.3 Command Prompt
Setting up a MinGW/Qt only environment...
-- QTDIR set to C:\Qt\4.5.3
-- PATH set to C:\Qt\4.5.3\bin
-- Adding C:\MinGW\bin to PATH
-- Adding C:\WINNT\System32 to PATH
-- QMAKESPEC set to win32-g++

C:\Qt\4.5.3>cd c:\arrowmatcher2

C:\arrowmatcher2>qmake -makefile arrowmatcher2.pro

C:\arrowmatcher2>make
```

```
Qt 4.5.3 Command Prompt
oc -nthreads -Wl,-Wl,-subsystem,windows -o debug\arrowmatcher2.exe object_script
.arrowmatcher2.Debug -L"c:\Qt\4.5.3\lib" -lmingw32 -lqtmaind ../ballistic/debug
/libarwballistic.a -lQtSvgd4 -lQt3Supportd4 -lQtXmld4 -lQtGuid4 -lQtCored4
mingw32-make[2]: Leaving directory 'C:/arrowmatcher2/src'
mingw32-make[1]: Leaving directory 'C:/arrowmatcher2/src'
cd test\ && c:\Qt\4.5.3\bin\qmake.exe test.pro -win32 -o Makefile
cd test\ && mingw32-make -f Makefile
mingw32-make[1]: Entering directory 'C:/arrowmatcher2/test'
mingw32-make -f Makefile.Debug
mingw32-make[2]: Entering directory 'C:/arrowmatcher2/test'
g++ -c -g -g -frtti -fexceptions -mthreads -Wall -DUNICODE -DQT_LARGEFILE_SUPPORT
-DQT_DLL -DQT_GUI_LIB -DQT_CORE_LIB -DQT_THREAD_SUPPORT -DQT_NEEDS_QMAIN -I"..
\..\Qt\4.5.3\include\QtCore" -I"....\Qt\4.5.3\include\QtGui" -I"....\Qt\4.5.3\
include" -I"." -I"....\Qt\4.5.3\include\ActiveQt" -I"debug" -I"....\Qt\4.5.3\
mkspecs\win32-g++" -o debug/main_test.o main_test.cpp
main_test.cpp: In function 'int main(int, char**)':
main_test.cpp:88: warning: unused variable 'ret'
g++ -enable-stdcall-fixup -Wl,-enable-auto-import -Wl,-enable-runtime-pseudo-rel
oc -nthreads -Wl,-Wl,-subsystem,windows -o debug/test.exe debug/main_test.o -L"
c:\Qt\4.5.3\lib" -lmingw32 -lqtmaind ..\ballistic\debug\libarwballistic.a -lQtGu
id4 -lQtCored4
mingw32-make[2]: Leaving directory 'C:/arrowmatcher2/test'
mingw32-make[1]: Leaving directory 'C:/arrowmatcher2/test'

C:\arrowmatcher2>
```

1.7.5 run arrowmatcher

Start the application. It is necessary to start the application from this folder "src", because to find the translation file for the german language:

```
1 cd src
2 release\arrowmatcher2.exe
```

```
g++ -enable-stdcall-fixup -Wl,-enable-auto-imp-
oc -mthreads -Wl -Wl,-subsystem,windows -o de
c:\Qt\4.5.3\lib" -lmingw32 -lqtmaind ..\ba
id4 -lQtCored4
mingw32-make[2]: Leaving directory `C:/arr
mingw32-make[1]: Leaving directory `C:/arr

C:\arrowmatcher2>cd src_
```

```
g++ -enable-stdcall-fixup -Wl,-enable-auto-imp-
oc -mthreads -Wl -Wl,-subsystem,windows -o de
c:\Qt\4.5.3\lib" -lmingw32 -lqtmaind ..\ba
id4 -lQtCored4
mingw32-make[2]: Leaving directory `C:/arr
mingw32-make[1]: Leaving directory `C:/arr

C:\arrowmatcher2>cd src
C:\arrowmatcher2\src>
```

```
g++ -enable-stdcall-fixup -Wl,-enable-auto-imp-
oc -mthreads -Wl -Wl,-subsystem,windows -o de
c:\Qt\4.5.3\lib" -lmingw32 -lqtmaind ..\ballis
id4 -lQtCored4
mingw32-make[2]: Leaving directory `C:/arrowma
mingw32-make[1]: Leaving directory `C:/arrowma

C:\arrowmatcher2>cd src
C:\arrowmatcher2\src>debug\arrowmatcher2.exe_
```

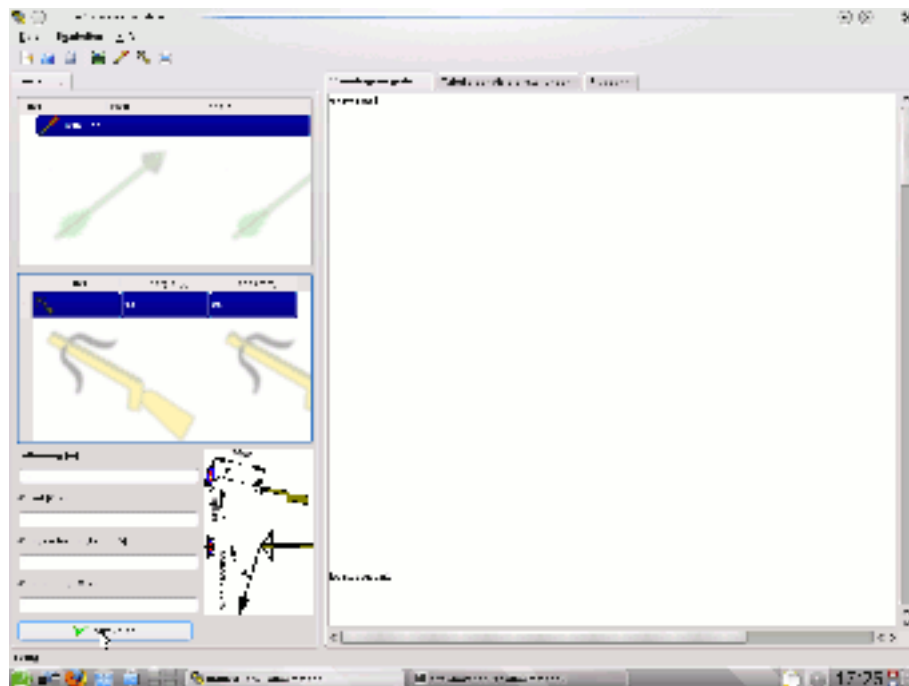
Chapter 2

getting started

2.1 The main window

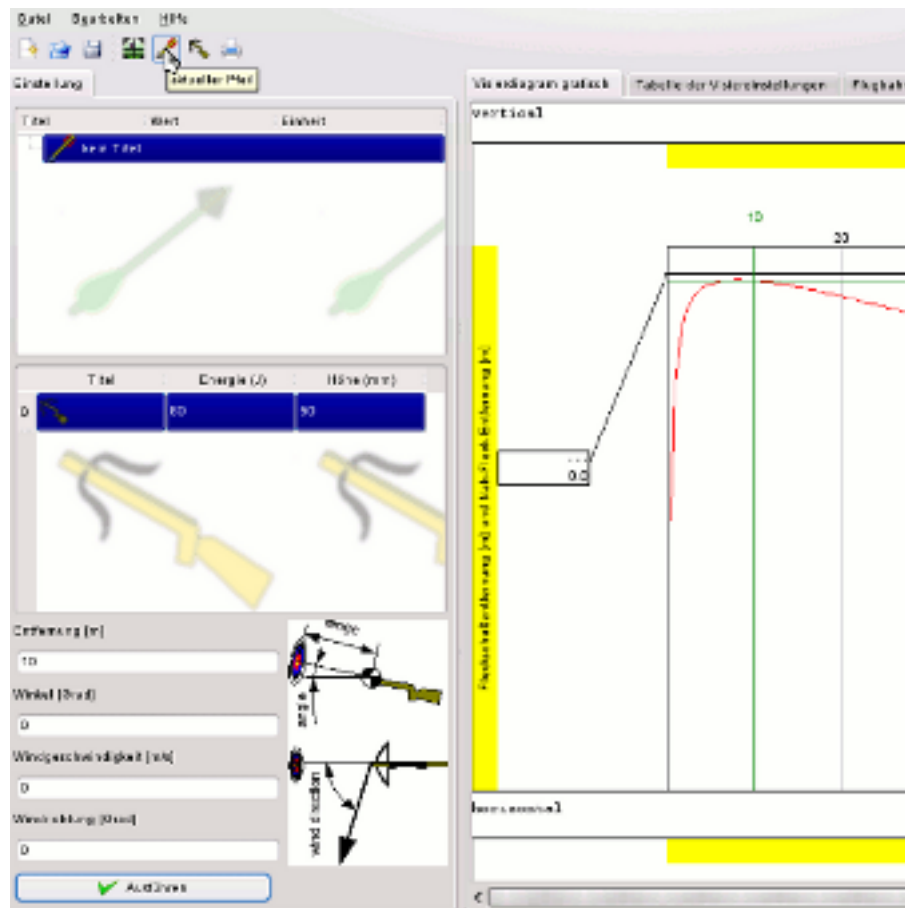
After start of this application the window appears like in the picture.

Select an arrow and a crossbow in the lists and click on "execute".



2.2 edit an arrow

Click on the arrow in the toolbar to open the dialog.



2.3 arrow dialog

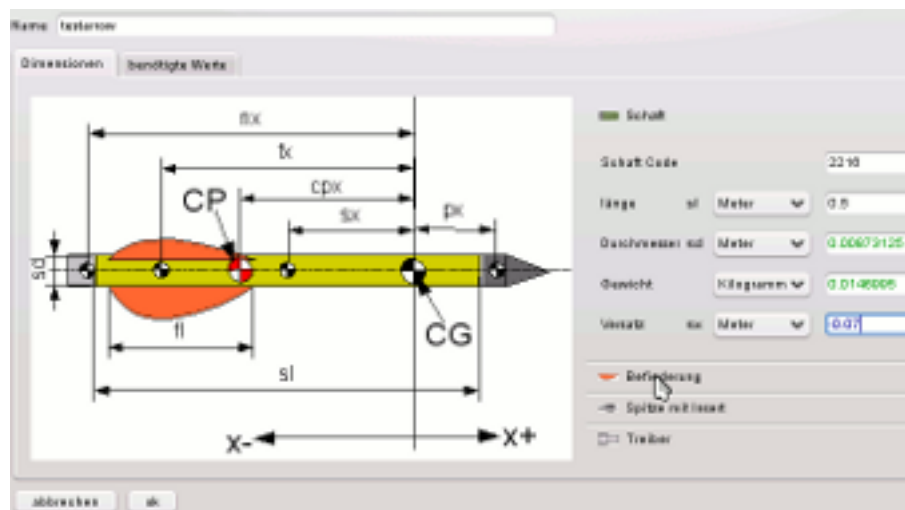
The arrow dialog contains 2 tabs:

"required values" and "dimensions"

The "dimensions" tab helps you to calculate the required values. So you don't need to input the required values.

Blue values are the default values. Green values are calculated and black values are user input. Black values are untouched by the application, but green and blue values are recalculated when it is possible.

The "shaft code" is the number with 4 digits on the shaft. If you know this number you should input it, because to calculate the diameter and the thickness.



 Schaft

 Befiederung

länge l_l Zentimeter

Fläche von einer Feder: Quadratmeter

Gewicht von einer Feder: Kilogramm

Versatz f_x Meter

 Spitze mit Insert

 Treiber

 Schaft

 Befiederung

 Spitze mit Insert

 Treiber

Gewicht Gramm

Versatz n_x Meter

Formfaktor frontal	<input type="text" value="1"/>
Formfaktor quer	<input type="text" value="1"/>
Frontalfläche	Quadratmeter <input type="text" value="746e-05"/>
Querschnittsfläche	Quadratmeter <input type="text" value=".035203"/>
Mittelpunkt vom Winddruck cpx	Meter <input type="text" value=".112395"/>
Massenträgheitsmoment:	Kilogramm Quadratmeter <input type="text" value="0185622"/>
Gewicht:	Kilogramm <input type="text" value="0276287"/>

2.4 Edit the crossbow

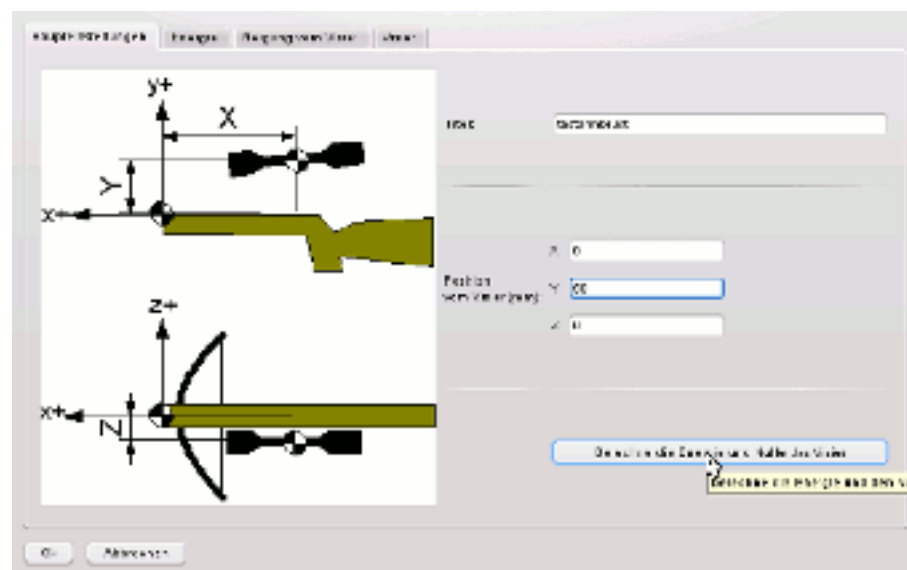
Click on the crossbow tool button in the toolbar.

Important is the position of the sight. The picture describe the 3 values x, y and z . For first steps only the first tab is necessary, the other tabs are described later.

The crossbow origin is normally the end of the track, where the arrow leaves the crossbow.

The origin of the sight is the middle point of the sight.

Click the button "Calculate the energy ..." to open a new dialog.



2.5 Setup

This is the main setup dialog for arrowmatcher. It is necessary to shoot at 2 different ranges with the same arrow and without change the setting of the sight. Select an arrow. Input the coordinates y and z of the 2 target points as shown in the image. Click on "calculate". Arrowmatcher try to determine the muzzle velocity of the arrow and the energy. Try these values:

	small range	wide range
range [Metre]	10	30
crosshair	do not change	do not change
vertical hit (y) [Millimetre]	0	-300

Table 2.1: Example values for speed calculation

This means the zero range is 10 metre. At 30 metre the target point is 300mm below. Now the setup is complete!

Titel	Wert	Einheit
testarrow		

Entfernung	Y (mm)	Z (mm)
kleine Entfernung (10)	0	0
grosse Entfernung (30)	-300	0

Ergebnisse:

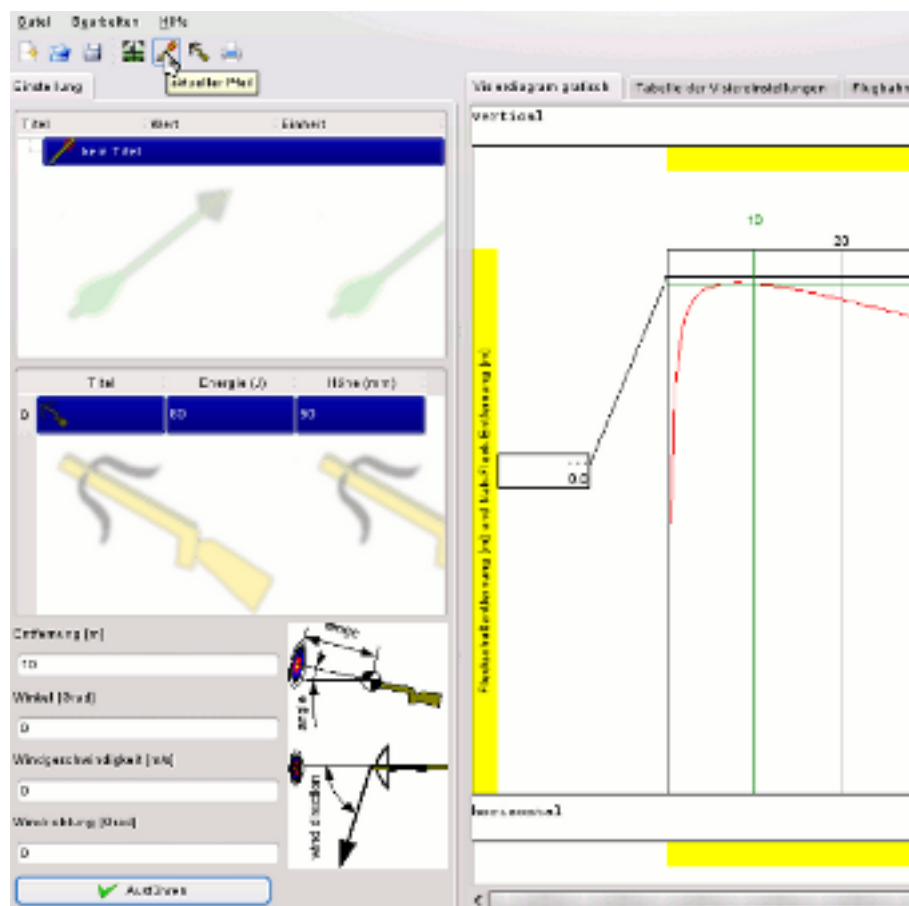
- Geschwindigkeit: 88.326 m/s
- Energie: 102.847 J
- Neigung: Y -10.8744 mm/m, Z 0

Chapter 3

arrow

3.1 edit an arrow

Click on the arrow in the toolbar to open the dialog.



3.2 Arrow Model

There are 2 models for arrows:

"Simplified Arrow"

and

"Full Arrow"

The Simplified Arrow is also for bullets.

3.3 Basic settings for the simplified arrow

The simplified arrow model take only 2 values: weight and diameter. You can used the simplified arrow model also for bullets.

Name

Model ☒ Vereinfachter Pfeil ☐ Vollständiger Pfeil

Grundlegend **Erweitert**

Durchmesser: sd Meter

Gewicht: Kilogramm

abbrechen ok

3.4 Basic settings for full arrow

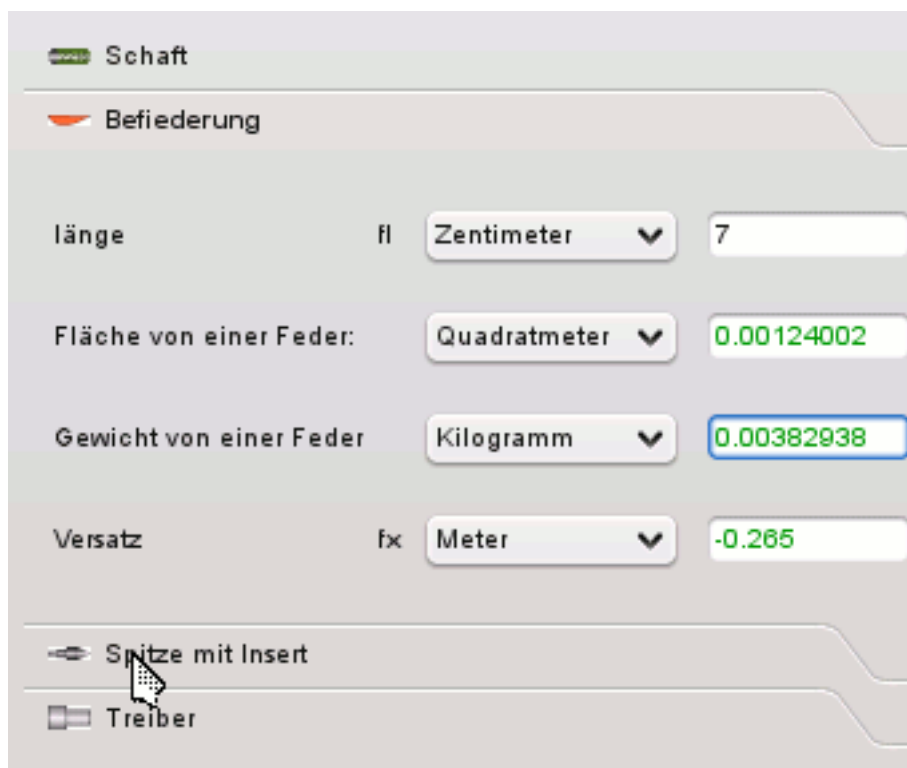
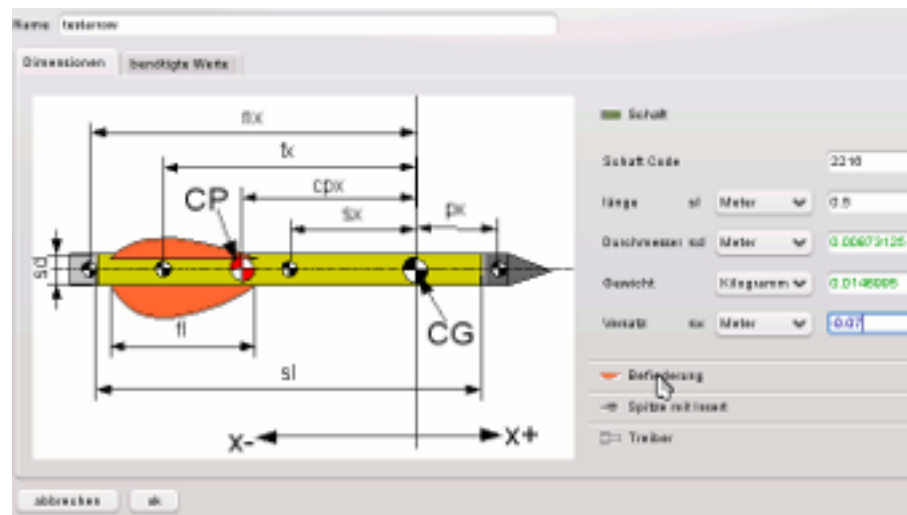
The arrow dialog contains 2 tabs:

"Basic" and "Advanced"

Insert only all values in the "Basic".

Blue values are the default values. Green values are calculated and black values are user input. Black values are untouched by the application, but green and blue values are recalculated when it is possible.

The "shaft code" is the number with 4 digits on the shaft. If you know this number you should input it, because to calculate the diameter and the thickness.





Schaft

Befiederung

Spitze mit Insert

Treiber

Gewicht: Gramm 1

Versatz nx: Meter -0.32

3.5 Advanced settings

The values in the "Advanced Settings" Tab are automatic calculated or default values. This is for advanced Users who want to play around with custom values.



Formfaktor frontal: 1

Formfaktor quer: 1

Frontalfläche: Quadratmeter 748e-05

Querschnittsfläche: Quadratmeter .035203

Mittelpunkt vom Winddruck cpx: Meter .112395

Massenträgheitsmoment: Kilogramm Quadratmeter .1185622

Gewicht: Kilogramm .0276287

Chapter 4

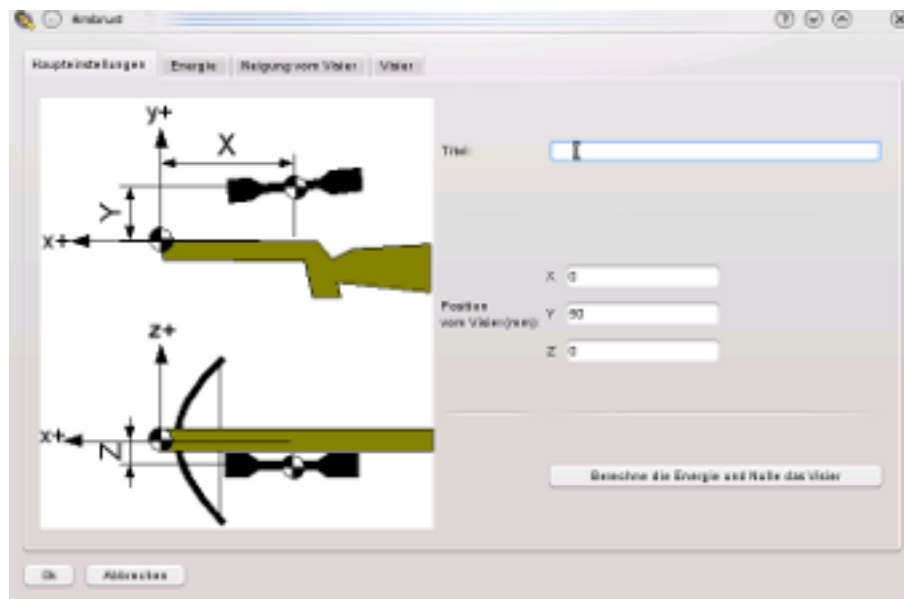
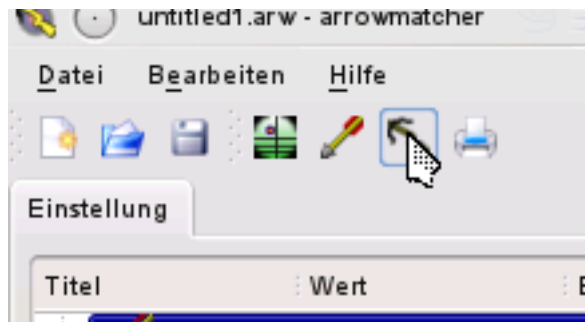
sight

4.1 Position of the sight

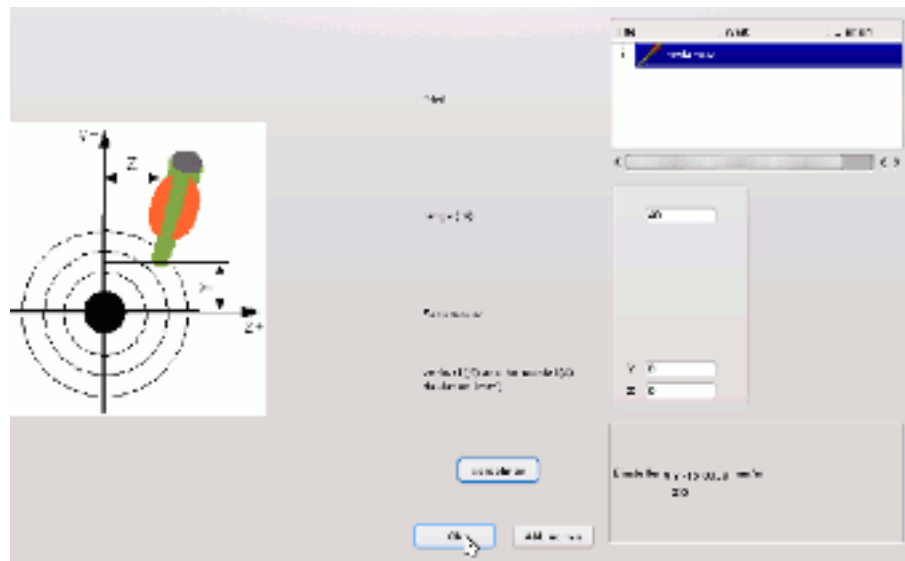
To edit the sight click the toolbar button with the crossbow.

The crossbow dialog appears. Insert the position of the sight. In most cases only the height (Y - Value) is important and the values for Z and X can be zero.

Click the tab "sight".

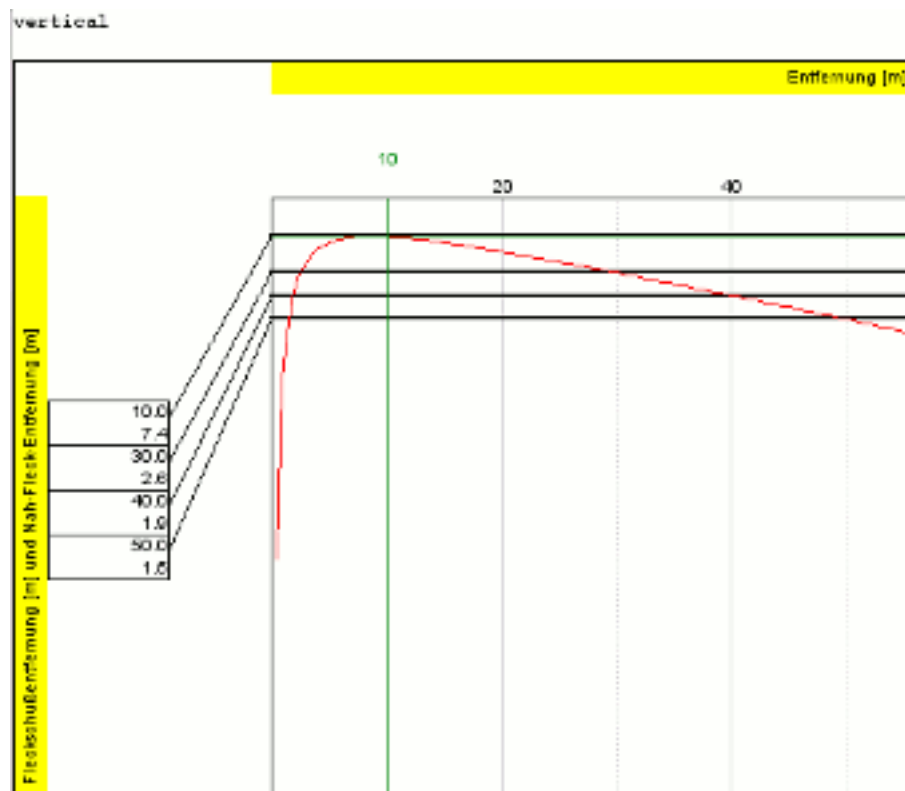


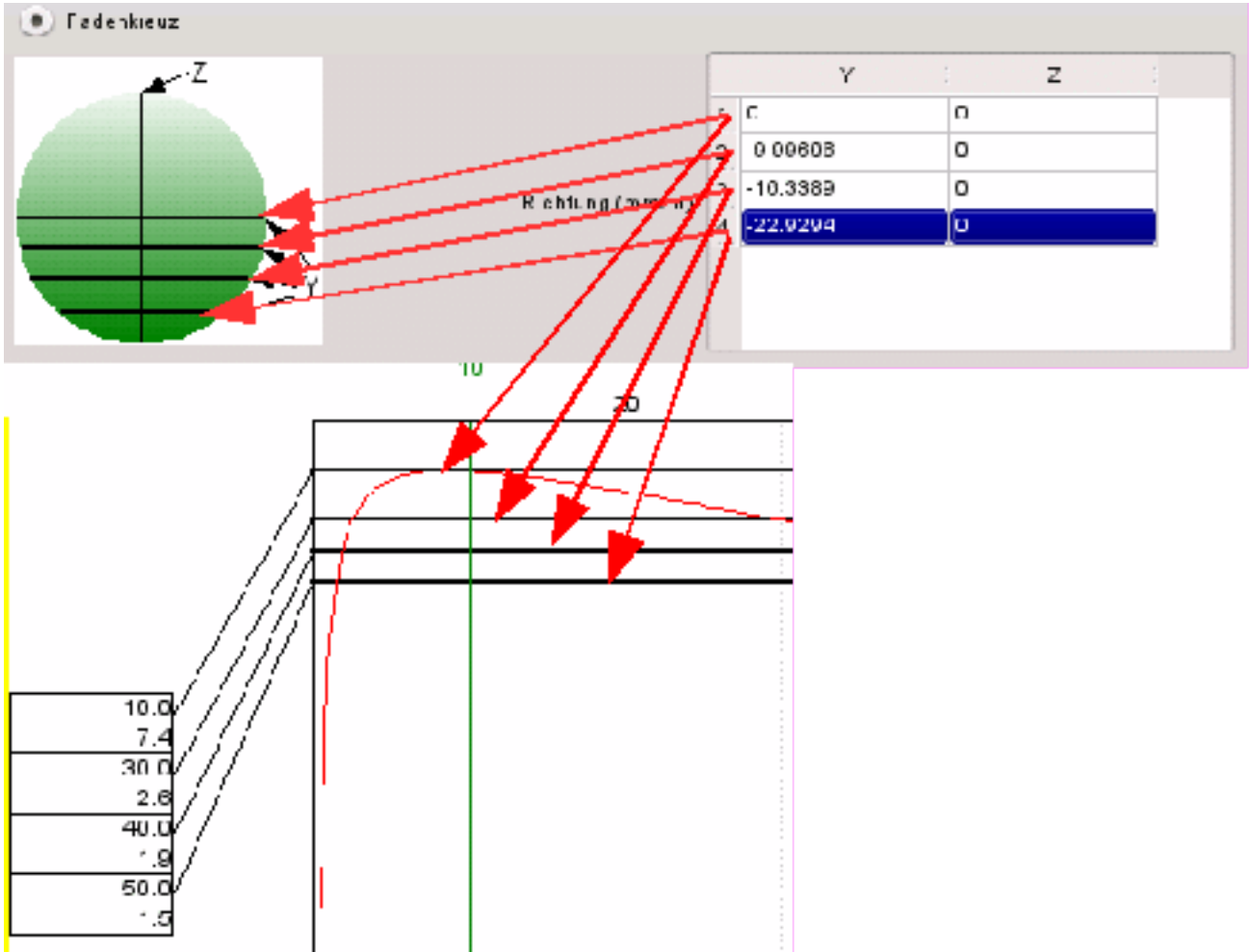
That's it. Click on "ok" to close the dialog.



4.4 Visier

Now you can see all the new crosshairs.





Chapter 5

installation of Qt for Windows

5.1 introduction

Please read this if you have troubles to install Qt on Windows.

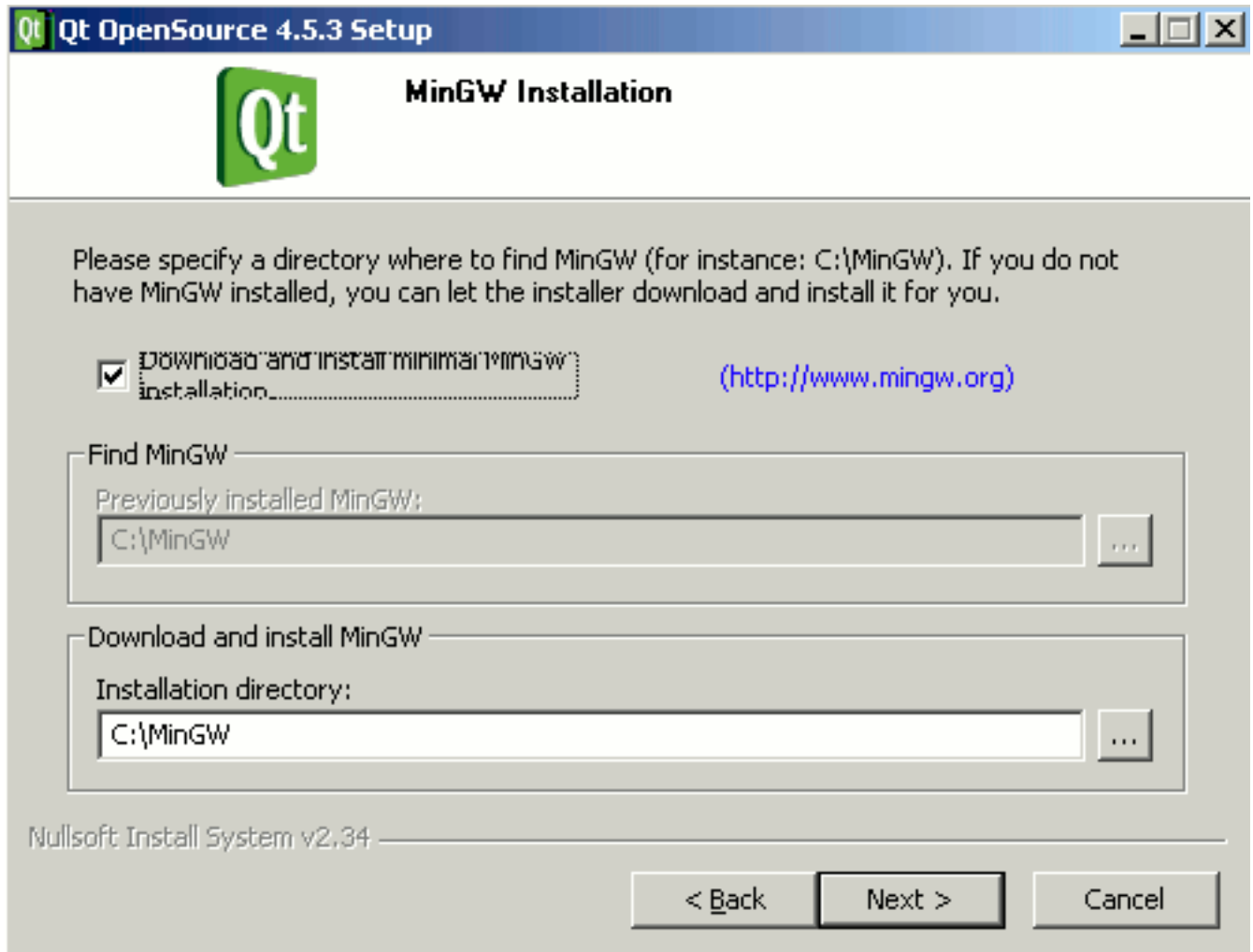
5.2 download

Download an older Version 4.5.3 of Qt from the ftp archiv: <ftp://ftp.qt.nokia.com/qt/source/qt-win-opensource-4.5.3-mingw.exe>

Doubleclick this file to start the setup program.

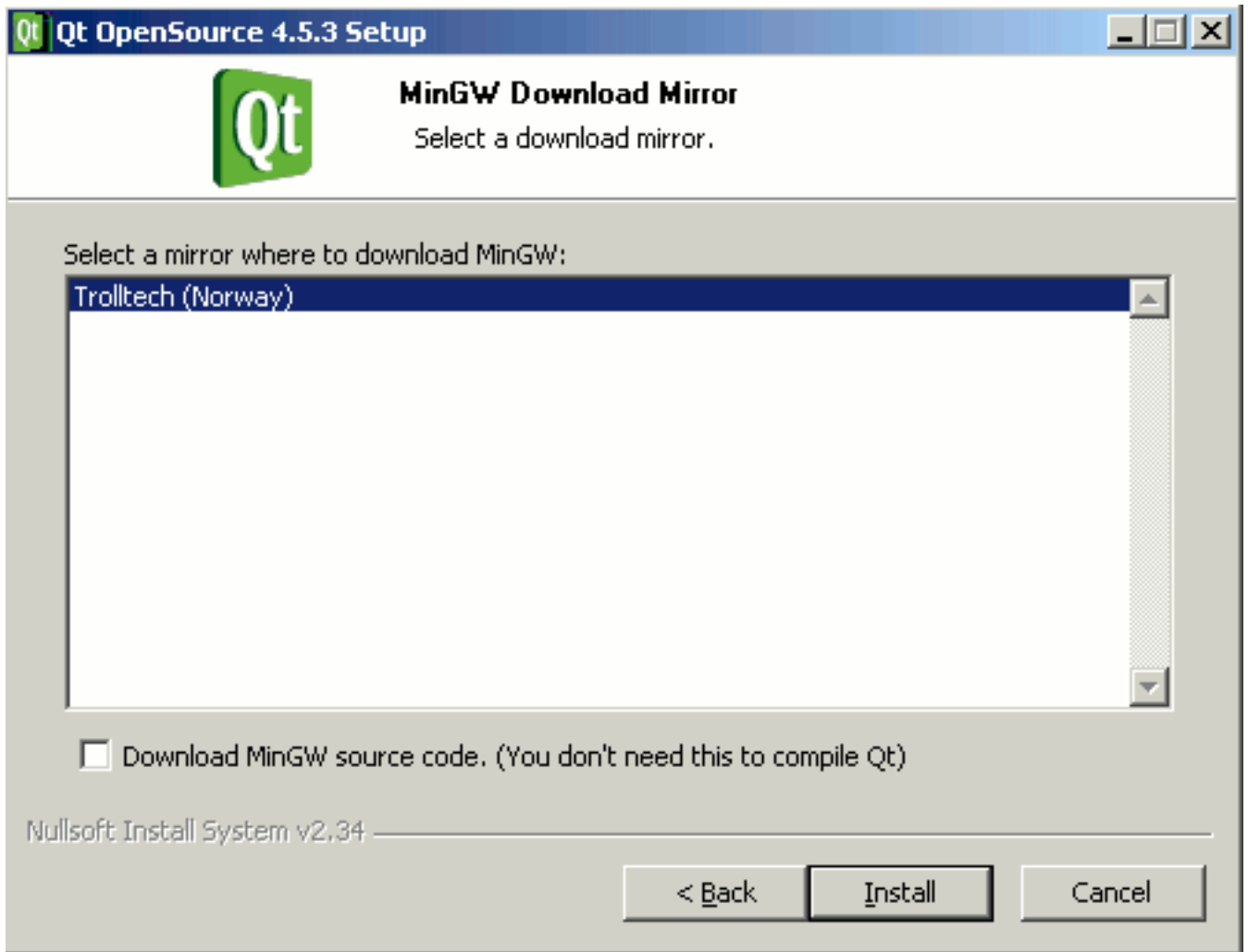
5.3 MinGW

Select MinGW. The souces are not necessary.



5.4 download MinGW

Select "Trolltech" to download MinGW, there is only one option.



5.5 finished

After a successful installation of Qt your rootfolder contains "MinGW" and "Qt".

