



Measuring
distances, areas and angles
in photos
with
MB-Ruler Pro

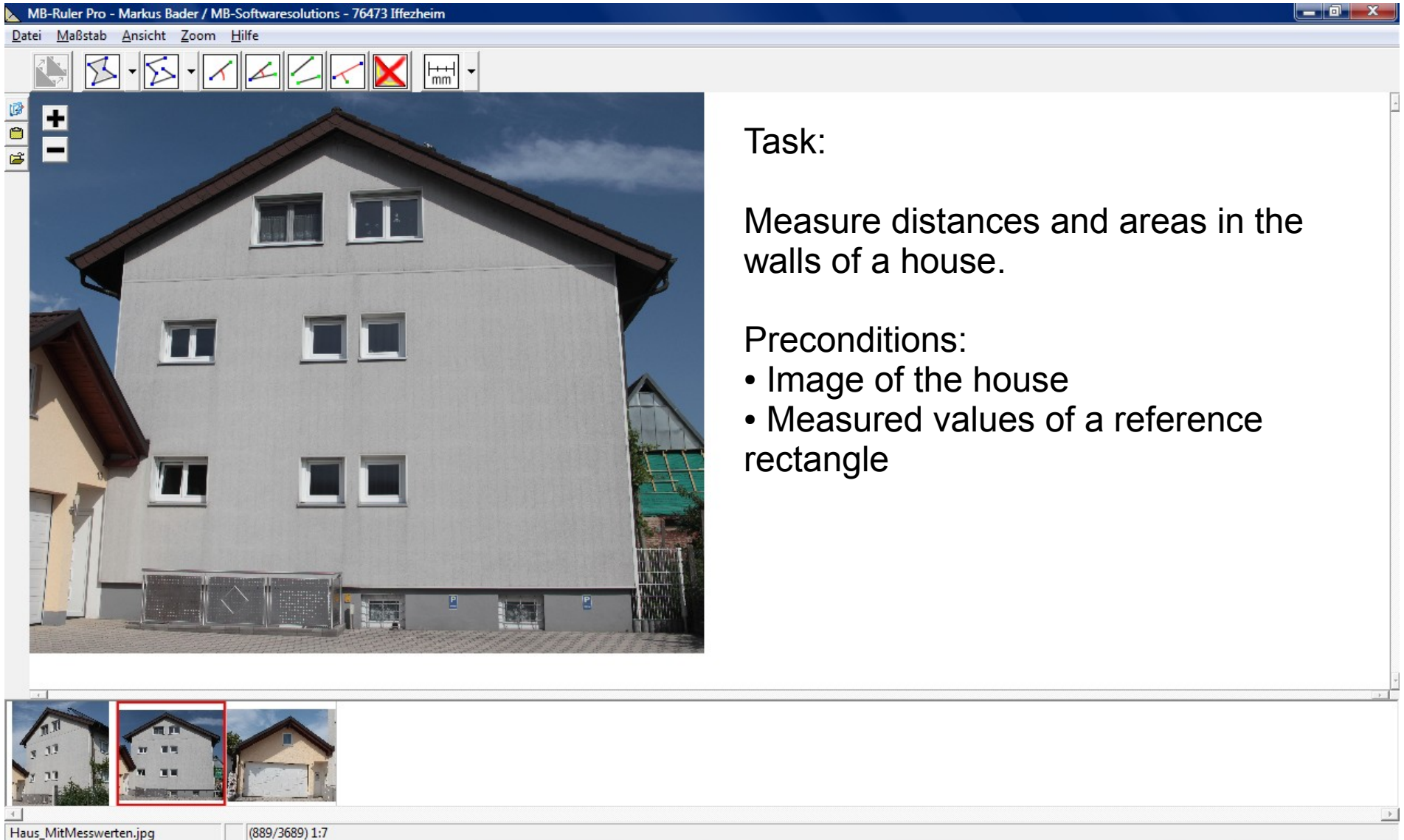




MB-Ruler Pro - „perspective measuring“

MB-Ruler Pro - Markus Bader / MB-Softwaresolutions - 76473 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe



Task:

Measure distances and areas in the walls of a house.

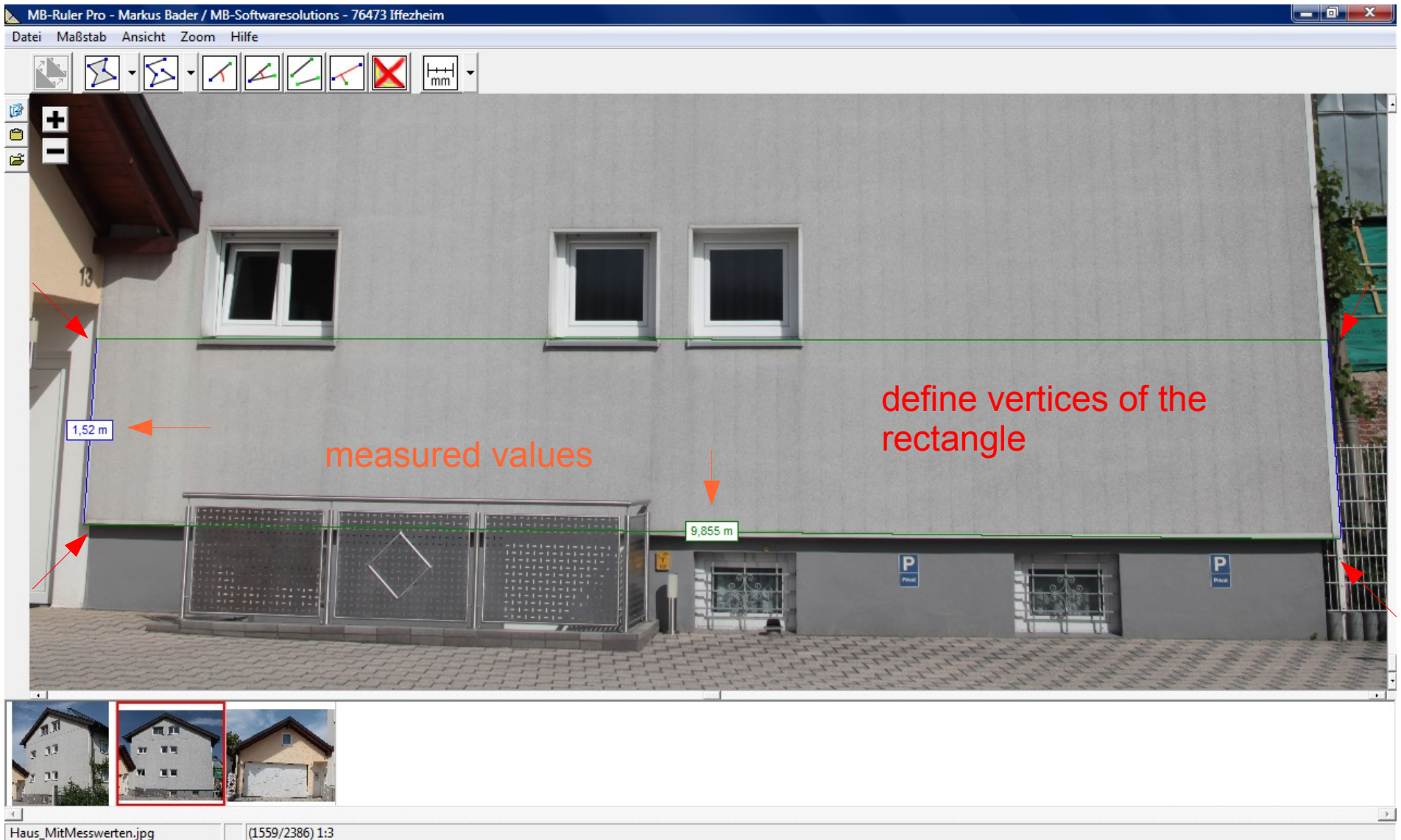
Preconditions:

- Image of the house
- Measured values of a reference rectangle

Haus_MitMesswerten.jpg (889/3689) 1:7



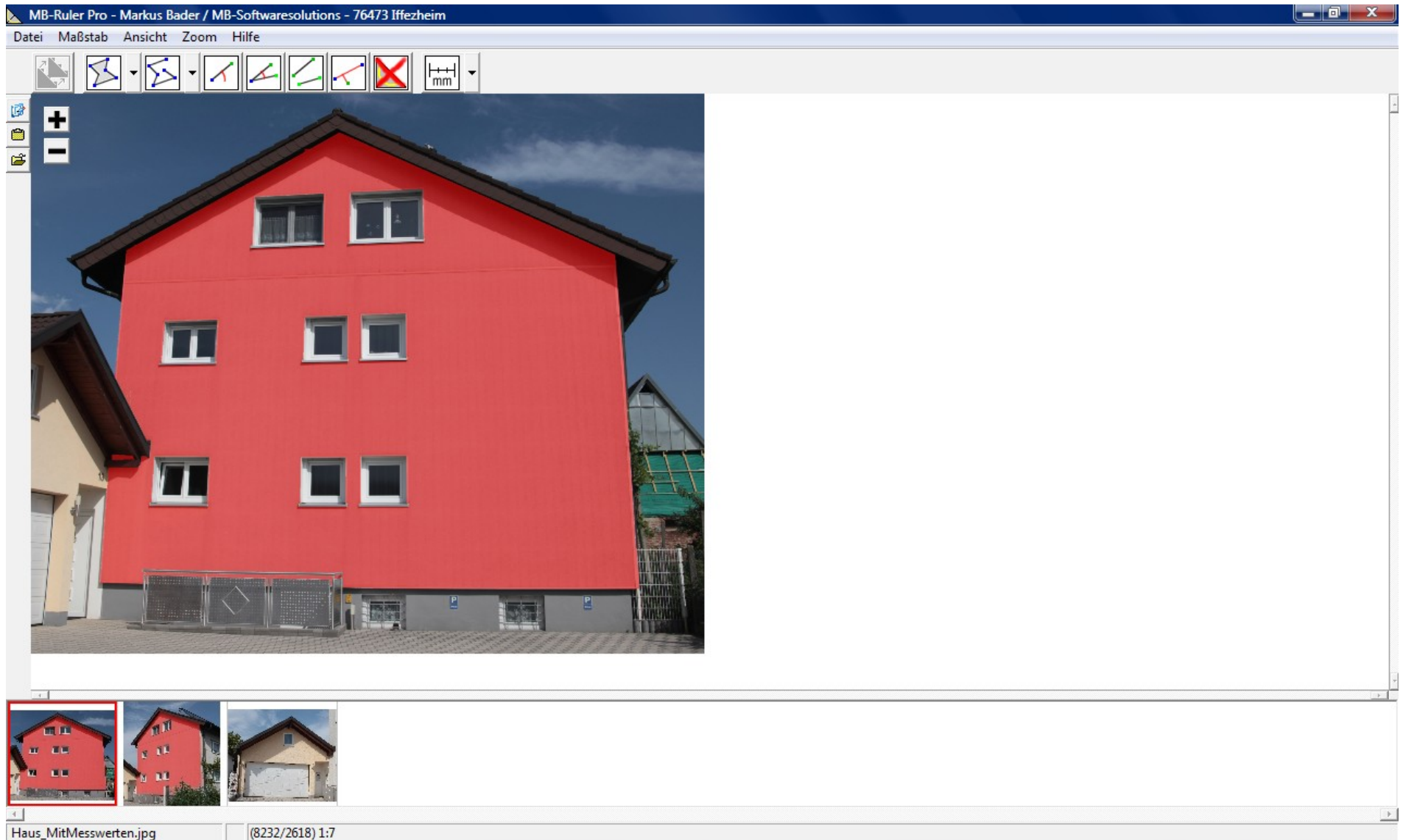
MB-Ruler Pro - „perspective measuring“ define reference rectangle



The reference rectangle is a rectangle, that was measured in reality (width and height)
It lies in the same plane, were the other values will be measured.



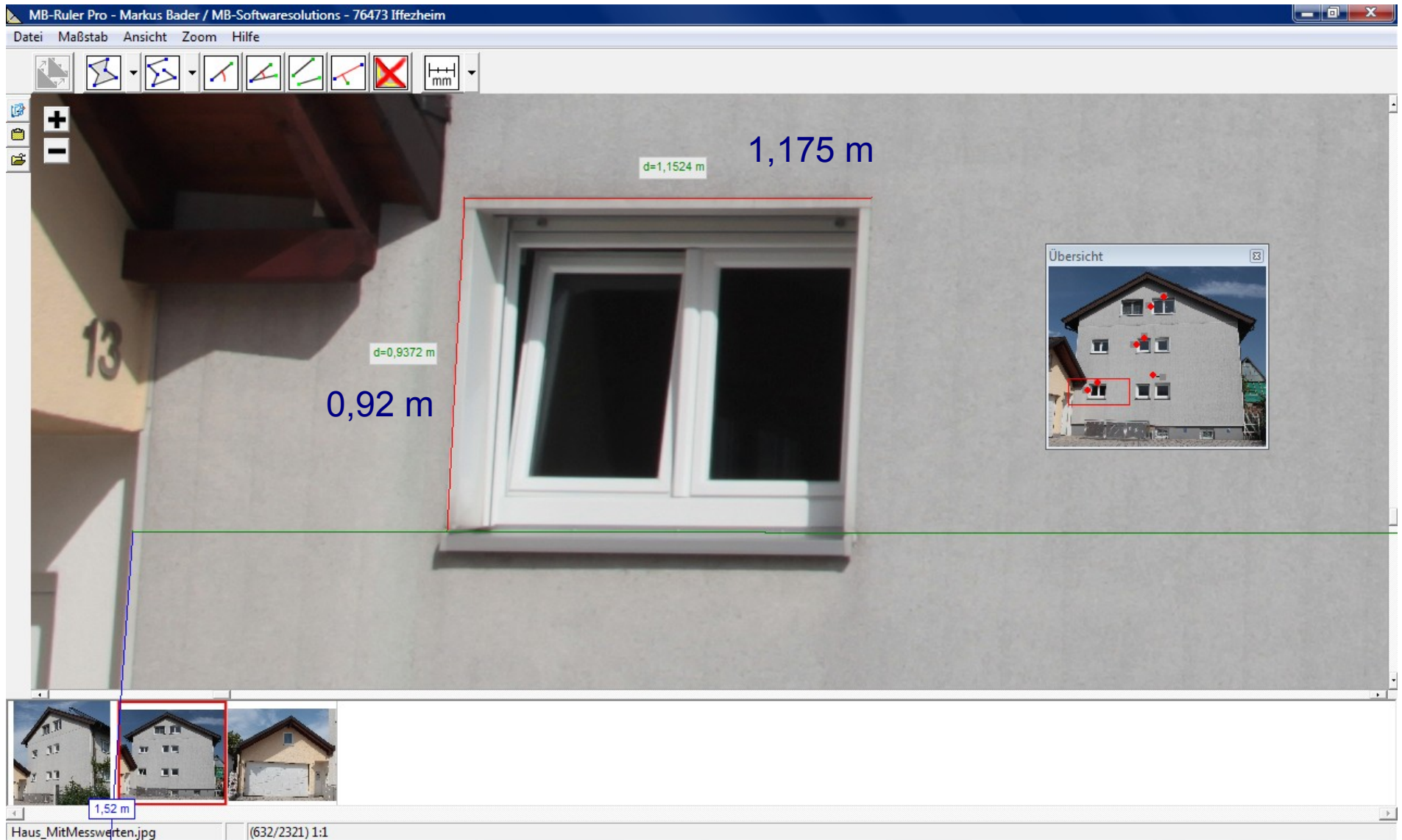
MB-Ruler Pro - „perspective measuring“ plane, with possible measure values



The reference rectangle defines a plane in the image, where you can measure further values – highlighted **red**. Define an other reference rectangle for objects outside this plane.



MB-Ruler Pro - „perspective measuring“ measure a distance (1)



Results measured live



MB-Ruler Pro - „perspective measuring“ measure a distance (2)

The screenshot displays the MB-Ruler Pro software interface. The main window shows a perspective view of a grey wall with two windows. A red rectangular box is drawn around the left window. The software has calculated two distance values: $d=0,9011\text{ m}$ (0,91 m) for the width and $d=0,9183\text{ m}$ (0,90 m) for the height. The interface includes a menu bar (Datei, Maßstab, Ansicht, Zoom, Hilfe), a toolbar with various measurement tools, and a zoom control. An overview window titled 'Übersicht' shows a smaller view of the entire house with a red box highlighting the measured window. At the bottom, there is a thumbnail gallery of different views of the house, with the current view selected. The status bar at the bottom left shows the file name 'Haus_MitMesswerten.jpg' and the current view '(2771/704) 1:1'.

Results measured live



MB-Ruler Pro - „perspective measuring“ measure a distance (3)

MB-Ruler Pro - Markus Bader / MB-Softwaresolutions - 76473 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe

1,54 m d=1,5211 m

d=1,1255 m

1,12 m

Übersicht

Haus_MitMesswerten.jpg (1109/196) 1:1

Results measured live



MB-Ruler Pro - „perspective measuring“ measure a distance (4)

The screenshot displays the MB-Ruler Pro software interface. The main window shows a perspective view of a grey building facade with several windows. A vertical red line is drawn through the center of the facade. A horizontal green line is drawn across the middle of the facade. A blue vertical line is drawn on the left side of the facade. A blue horizontal line is drawn at the bottom of the facade. The software has measured several distances, which are displayed in green text boxes:

- $d=0,9011\text{ m}$ (width of the top window)
- $d=0,9183\text{ m}$ (width of the top window)
- $d=1,1524\text{ m}$ (width of the middle window)
- $d=0,9372\text{ m}$ (width of the middle window)
- $d=6,1272\text{ m}$ (width of the facade between the red and blue vertical lines)
- $6,01\text{ m}$ (width of the facade between the red and blue vertical lines)
- $1,52\text{ m}$ (width of the facade between the blue vertical line and the left edge)
- $9,855\text{ m}$ (width of the facade between the blue vertical line and the right edge)

An inset window titled "Übersicht" (Overview) shows a smaller version of the building facade with red dots marking the measurement points. The software interface includes a menu bar (Datei, Maßstab, Ansicht, Zoom, Hilfe) and a toolbar with various measurement tools. The status bar at the bottom shows the file name "Haus_MitMesswerten.jpg" and the resolution "(3264/1925) 1:4".

Results measured live



MB-Ruler Pro - „perspective measuring“

summary (1)

- The length of inaccessible distances can be measured indirectly – an image is sufficient
- The errors of measured distances is less than 3%





MB-Ruler Pro - „perspective measuring“

summary (1)

- The length of inaccessible distances can be measured indirectly – an image is sufficient
- The errors of measured distances is less than 3%

But:

What, if the image of the house can only be taken from a side angle?





MB-Ruler Pro - „perspective measuring“

MB-Ruler Pro - Markus Bader / MB-Softwaresolutions - 76473 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe

Task:

Measure distances and areas in the walls of a house.

Preconditions:

- Image of the house
- Measured values of a reference rectangle

Haus (schräg)_MitMesswerten.jpg (6286/875) 1:7



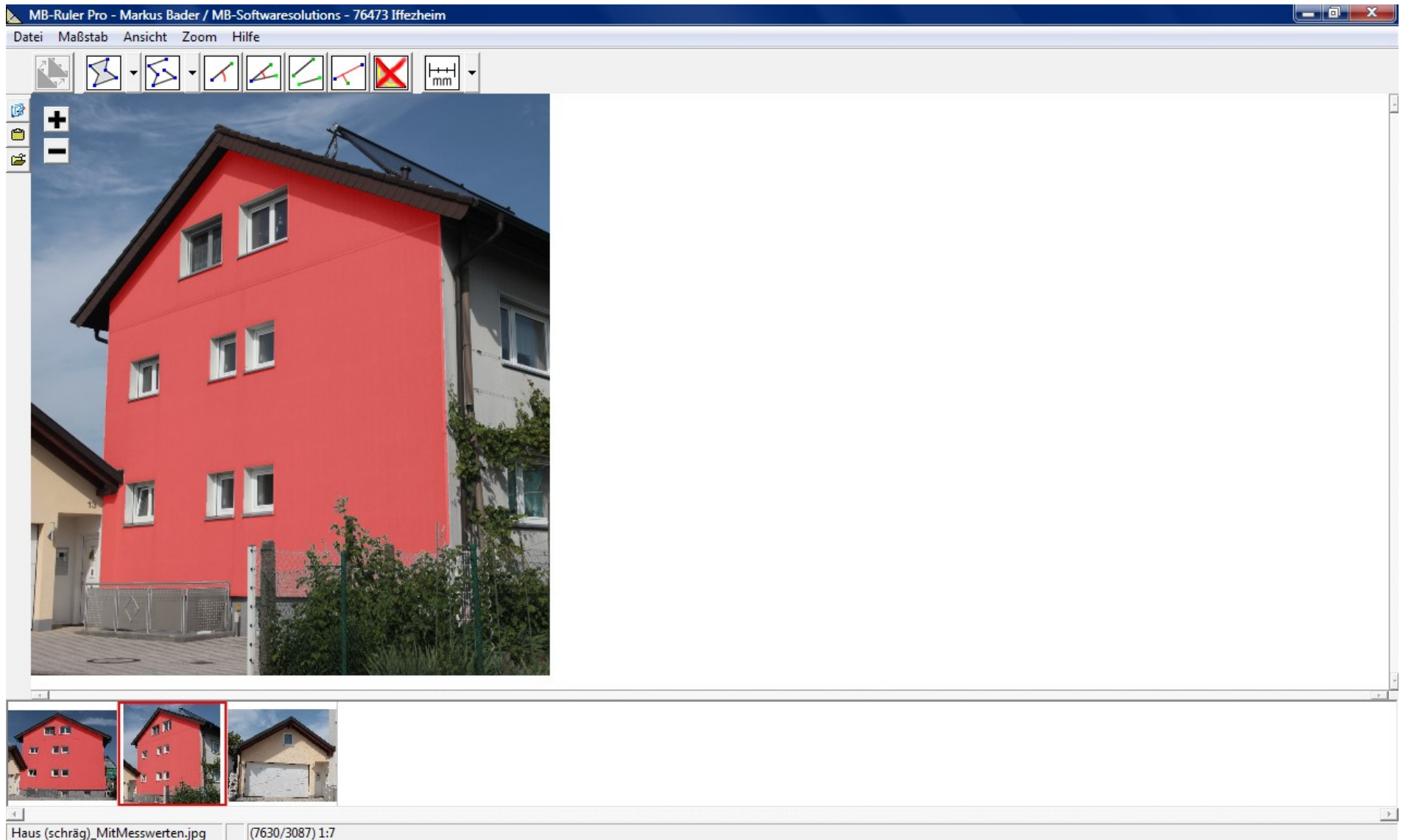
MB-Ruler Pro - „perspective measuring“ define reference rectangle



The reference rectangle is a rectangle, that was measured in reality (width and height)
It lies in the same plane, were the other values will be measured.



MB-Ruler Pro - „perspective measuring“ plane, with possible measure values



The reference rectangle defines a plane in the image, where you can measure further values – highlighted **red**. Define an other reference rectangle for objects outside this plane.



MB-Ruler Pro - „perspective measuring“ measure a distance (1)

The screenshot displays the MB-Ruler Pro software interface. The main window shows a perspective view of a house facade with several measurements:

- A horizontal measurement of **1,175 m** is shown above a window.
- A vertical measurement of **0,92 m** is shown to the left of a window.
- A diagonal measurement of **d=1,1603 m** is shown above the window.
- A diagonal measurement of **d=0,9073 m** is shown to the left of the window.
- A vertical measurement of **1,52 m** is shown at the bottom of the image.

The software interface includes a menu bar (Datei, Maßstab, Ansicht, Zoom, Hilfe), a toolbar with various measurement tools, and a status bar at the bottom showing the file name "Haus (schräg)_MitMesswerten.jpg" and the scale "(858/2776) 1:1". An inset window titled "Übersicht" (Overview) shows a wider view of the house with red markers indicating the measurement points.

Results measured live



MB-Ruler Pro - „perspective measuring“ measure a distance (2)

The screenshot displays the MB-Ruler Pro software interface. The main window shows a perspective view of a grey wall with two windows. A red rectangular selection box is drawn around the left window. Two measurement lines are visible: a blue line labeled "0,91 m" and a green line labeled "d=0,8980 m". Another blue line labeled "0,90 m" and a green line labeled "d=0,9018 m" are also present. The software interface includes a menu bar (Datei, Maßstab, Ansicht, Zoom, Hilfe), a toolbar with various measurement tools, and a zoom control. An inset window titled "Übersicht" (Overview) shows a wider view of the building with a red box indicating the current measurement area. At the bottom, there is a thumbnail gallery with three images of the building, the first of which is highlighted with a red border. The status bar at the bottom shows the file name "Haus (schräg)_MitMesswerten.jpg" and the coordinates "(1767/1390) 1:1".

Results measured live



MB-Ruler Pro - „perspective measuring“ measure a distance (3)

MB-Ruler Pro - Markus Bader / MB-Softwaresolutions - 76473 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe

1,54 m $d=1,5288\text{ m}$

$d=1,1146\text{ m}$ 1,12 m

Übersicht

Haus (schräg)_MitMesswerten.jpg (1354/650) 1:1

Results measured live



MB-Ruler Pro - „perspective measuring“ measure a distance (4)

MB-Ruler Pro - Markus Bader / MB-Softwaresolution - 76472 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe

d=1,1146 m

d=0,8980 m

d=0,9018 m

d=5,9382 m

6,01 m

d=1,1603 m

d=0,9073 m

1,52 m

9,855 m

Übersicht

Haus (schräg)_MitMesswerten.jpg (3352/1482) 1:4

Results measured live



MB-Ruler Pro - „perspective measuring“

summary (2)

- The length of inaccessible distances can be measured indirectly – an image is sufficient
- **even if the image is taken from a side angle**
- The errors of measured distances is less than 3%
- Therefore the error of an area is less than 5,9%





MB-Ruler Pro - „perspective measuring“ measure an area

MB-Ruler Pro - Markus Bader / MB-Softwaresolutions - 76473 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe

U=34,103 m
A=77,2536912 m²

1,52 m

9,855 m

Haus_MitMesswerten.jpg (728/1015) 1:7

MB-Ruler Pro - Markus Bader / MB-Softwaresolutions - 76473 Iffezheim

Datei Maßstab Ansicht Zoom Hilfe

U=33,849 m
A=75,9472837 m²

1,52 m

9,855 m

Haus (schräg)_MitMesswerten.jpg (854/2968) 1:7

The measured results differ from the different angles of view – but are equal within the calculated errors of areas of less than 6%



MB-Ruler Pro - „perspective measuring“

precision of measuring / frequent errors

The precision of the results depend on several parameters.

Avoid these point to guarantee a high precision

- Images with a low resolution
- Image not focused in the image part of the reference rectangle
- small reference rectangle (in pixel)
- reference rectangle is far away from the camera
- kleine Brennweiten (Weitwinkel und Fischaugen)
==> Linseneffekte am Bildrand



MB-Ruler Pro - „perspective measuring“

demo version

Die in dieser Präsentation verwendeten Bilder sind Bestandteil der Demoversion des MB-Ruler Pro Zusatzmoduls „perspektivische Vermessung“.

Laden Sie die Demoversion von der „MB-Ruler Pro“ Homepage

<http://www.Markus-Bader.de/MB-RulerPro/perspektive.d.php4>

herunter und experimentieren Sie.