

PTViewerME

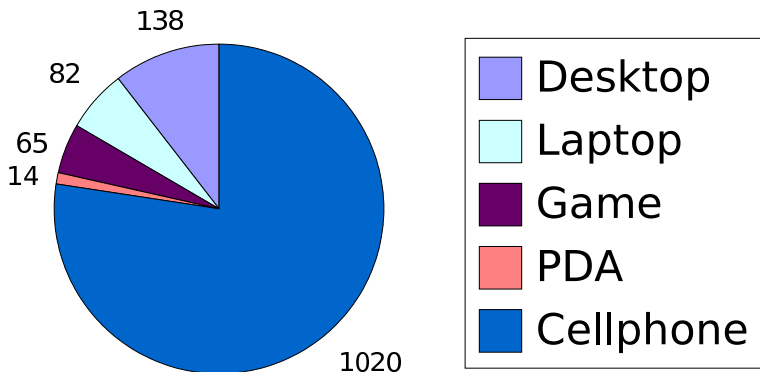
VR-Viewer for Mobile Devices

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PanoTools Meeting
Luzern 2007

VR Playback Devices - World Sales 2006¹ (Mio Units)



¹CBC-News, Computer Industry Almanac Inc, journal.pcvconsole.com

Outline

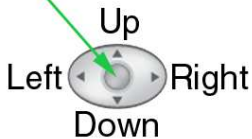
- 1 Technology
 - Overview
 - Schematics
 - Demonstration
- 2 Requirements
 - Device
 - Images
- 3 Files
 - Image Container
 - VR Container
 - Standalone Projects
- 4 Installation
- 5 Remarks

PTViewerME - Panoramas on Cellphones



Panorama

Zoom In/Out

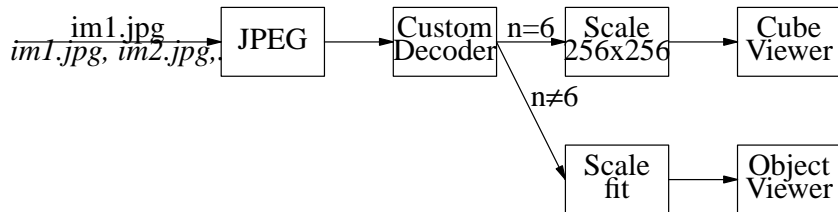


Object

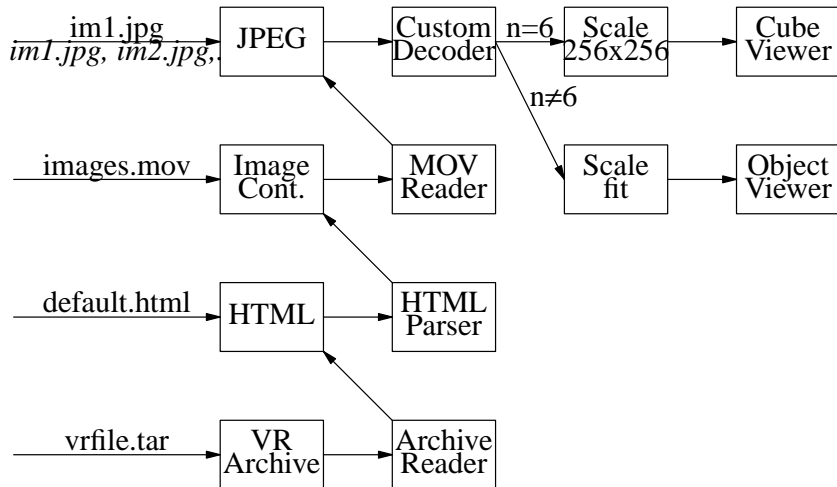
PTViewerME - Features

- Cubic panorama viewer (360° pan, 180° tilt, zoom).
- Object viewer (360°-turn).
- QTVR and PTViewer-format (subset, codec:JPEG).
- Fast (> 20 fps on typical phone).
- Java-profile MIDP 2.0/CLDC 1.1, JSR 75 (card-access), JSR 184 (mobile 3D graphics).
- Future extensions: Interface to onboard-GPS via Java-API JSR 179.

PTViewerME - Schematics



PTViewerME - Schematics



Device Requirements

<http://www.forum.nokia.com/devices>

Forum NOKIA
Driving mobile innovation

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Home: Resources: Device Specifications: Device details

Resources Device Details

- Getting Started
- Device Specifications
- Tools and SDKs
- Documentation
- Technologies
- Porting
- Forum Nokia for Universities
- Open Source

Technical Services

- Technical Support
- Technical Consultancy
- Knowledge Base
- Training
- Testing
- Quality
- Usability

Platforms

NOKIA 6230i

S40^{2nd Ed}



announced 01-Mar-05

The Nokia 6230i imaging phone combines advanced image and video features with high-speed data (EDGE) capabilities. Messaging features such as e-mail, instant messaging (IM) and push-to-talk

http://www.forum.nokia.com/devices

<p>Series 40 Platform S60 Platform Series 80 Platform For CDMA Market</p>	Capabilities make the device suited to both mobile lifestyle and business applications.	
<p>Programs</p> <p>Forum Nokia Launchpad Forum Nokia PRO Forum Nokia Champion</p>	<p>Nokia 6230i Technical Specs</p>	<p>Search by feature ></p>
<p>Go To Market</p> <p>Operators Aggregators Enterprise Nokia Sales Channels</p>	<p>Operating System: Nokia OS</p>	<p>Tools</p>
<p>Communities</p> <p>Discussion Boards Blogs Wiki</p>	<p>Developer Platform: Series 40 Developer Platform 2.0</p>	<p>The main Tools & SDKs page www.forum.nokia.com/tools provides all the tools & SDKs in an easy to access form. The page also includes Getting Started -articles giving an overview of the tools and SDKs.</p>
<p>Regional web sites Chinese Japanese South-East Asia and Pacific</p>	<p>Java Technology: JSR 75 FileConnection and PIM API CLDC 1.1 Nokia UI API JSR 82 Bluetooth API (No DBEX) JSR 184 Mobile 3D Graphics API MIDP 2.0 JSR 185 JTWI JSR 135 Mobile Media API JSR 120 Wireless Messaging API</p>	<p>Nokia Series 40 Theme Studio Nokia Series 40 Theme Studio is a PC based tool for creating User Interface themes for compatible Series 40 handsets. Theme developers can create, view, compare and save themes. The created theme packages can be downloaded to compatible handsets using methods supported by both the handsets and the PC (bluetooth, IrDa, Cable) or over the air (OTA).</p> <hr/> <p>Documents</p> <p>Series 40 Developer Platform: FAQ This document answers the most frequently asked questions from developers and business managers regarding the Series 40 Developer Platform, including recent enhancements.</p> <hr/> <p>Series 40 Developer Platform: Introductory White Paper This document introduces Series 40 Developer Platform; it describes the user functionality provided by the platform and provides an overview of the options for developing applications and content.</p> <hr/>
	<p>Browser: WAP 2.0 XHTML over TCP/IP</p>	
	<p>Messaging: MMS+SMIL SMS</p>	
	<p>Digital Rights Management: OMA DRM v1.0</p>	
	<p>Delivery Method:</p>	

<http://www.forum.nokia.com/devices>

<p>Series 40 Platform S60 Platform Series 60 Platform For CDMA Market</p>	<p>Capabilities make the device suited to</p>	<p>Java Technology:</p> <p>JSR 75 FileConnection and PIM API CLDC 1.1</p> <p>Nokia UI API</p> <p>JSR 82 Bluetooth API (No OBEX)</p> <p>JSR 184 Mobile 3D Graphics API MIDP 2.0</p> <p>JSR 185 JTWI</p> <p>JSR 135 Mobile Media API</p> <p>JSR 120 Wireless Messaging API</p>
<p>Programs</p> <p>Forum Nokia Launchpad Forum Nokia PRO Forum Nokia Champion</p>	<p>Nokia 6230i Technical Specs</p> <p>Operating System: Nokia OS</p> <p>Developer Platform: Series 40 Developer Platform 2.0</p> <p>Java Technology: JSR 75 FileConnection and PIM API CLDC 1.1 Nokia UI API JSR 82 Bluetooth API (No OBEX) JSR 184 Mobile 3D Graphics API MIDP 2.0 JSR 185 JTWI JSR 135 Mobile Media API JSR 120 Wireless Messaging API</p>	
<p>Go To Market</p> <p>Operators Aggregators Enterprise Nokia Sales Channels</p>	<p>Browser: WAP 2.0 XHTML over TCP/IP</p>	<p>Developer Platform, including recent enhancements.</p>
<p>Communities</p> <p>Discussion Boards Blogs Wiki</p>	<p>Messaging: MMS+SMIL SMS</p>	<p>Series 40 Developer Platform: introductory White Paper This document introduces Series 40 Developer Platform; it describes the user functionality provided by the platform and provides an overview of the options for developing applications and content.</p>
<p>Regional web sites Chinese Japanese South-East Asia and Pacific</p>	<p>Digital Rights Management: OMA DRM v1.0</p> <p>Delivery Method:</p>	

<http://www.forum.nokia.com/devices>

GSM 850/900
Regional Availability:
Africa
Americas
Asia-Pacific
Europe
Primary Screen Display:
Resolution: 208 x 208
Color Depth: 16 bit
Physical Descriptions:
Dimensions: 103 x 44 x 20 mm
Weight: 99 g
Memory:
Heap size: 2 MB
Shared Memory for Storage: 31 MB
Max JAR Size: 500 KB
Keypad Descriptions:
Grid Key Mat
5-way Scrolling
3 Labeled Soft Keys
Video Support:
3GPP formats (H.263)
MPEG-4
Network Data Support:
CSD
GPRS
HSCSD

Primary Screen Display:
Resolution: 208 x 208
Color Depth: 16 bit

Memory:
Heap size: 2 MB
Shared Memory for Storage: 31 MB
Max JAR Size: 500 KB

Cubic Face Images

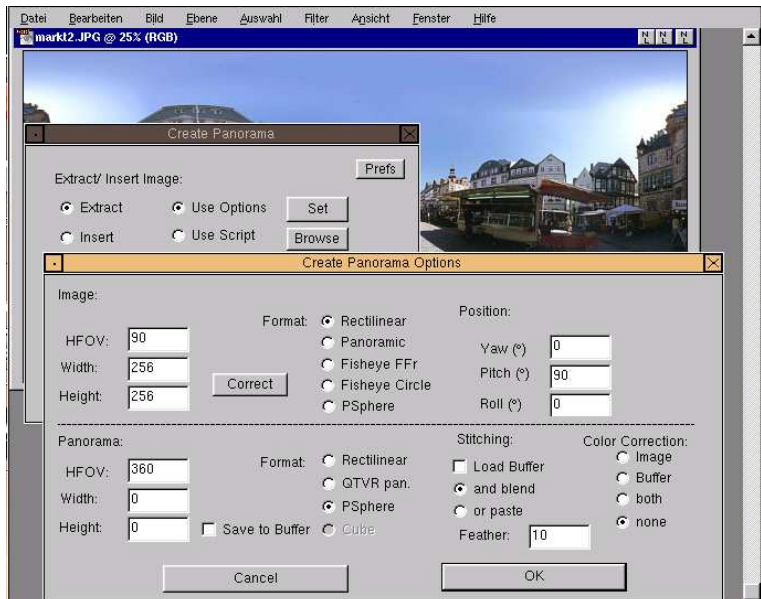
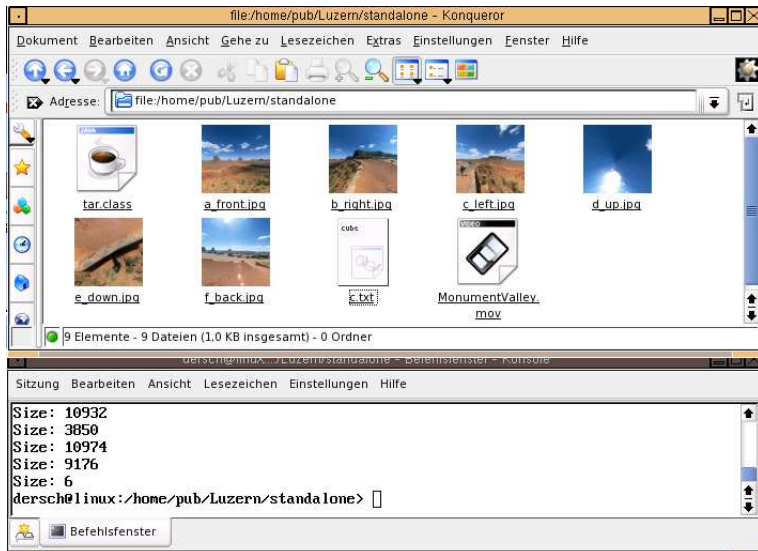


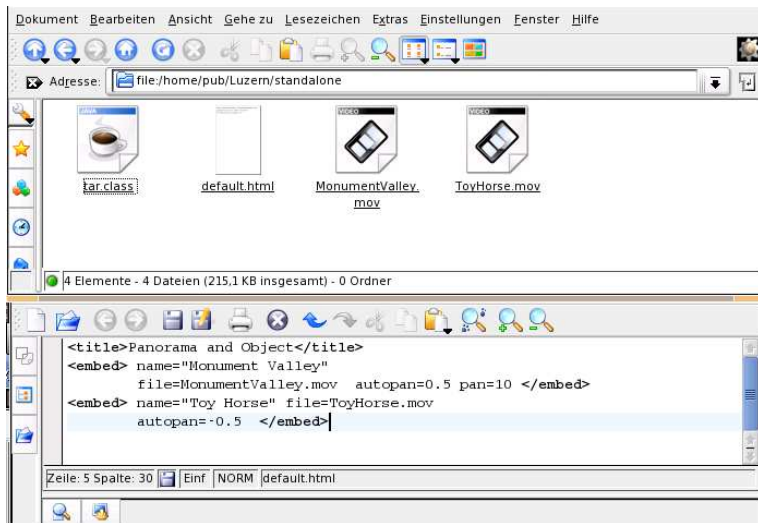
Image Container



Image - Container



VR Container

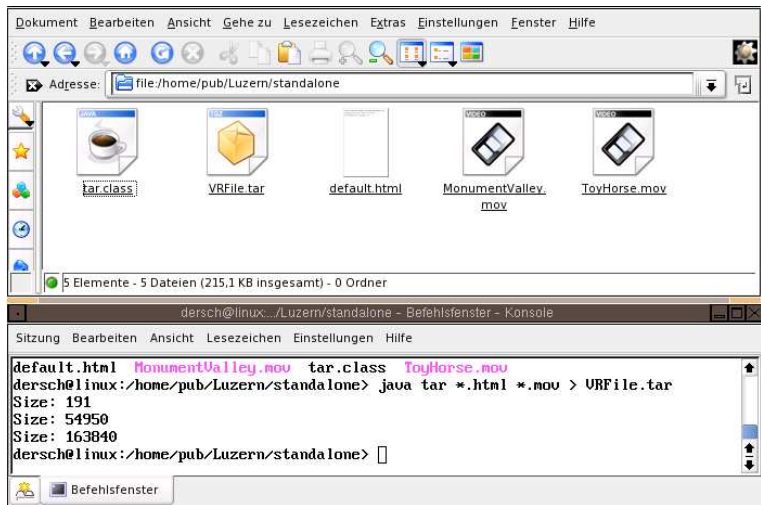


Supported HTML - Tags

- title
- embed
 - ▶ src file
 - ▶ icon
 - ▶ name
 - ▶ fov, fovmax, fovmin
 - ▶ pan, panmax, panmin
 - ▶ tilt, tiltmax, tiltmin
 - ▶ order
 - ▶ autopan

```
<title>Marburg</title>  
<embed> name="Schloss_1"  
        file=schloss1.mov  
        icon=schloss1.png  
        pan=180 autopan=-0.5  
        order="0,1,3,4,5,2"  
</embed>  
<embed> name="Schloss_2"  
        file=schloss2.mov  
        icon=schloss2.png  
        autopan=0.5  
        order="0,1,3,4,5,2"  
</embed>
```


VR - Container

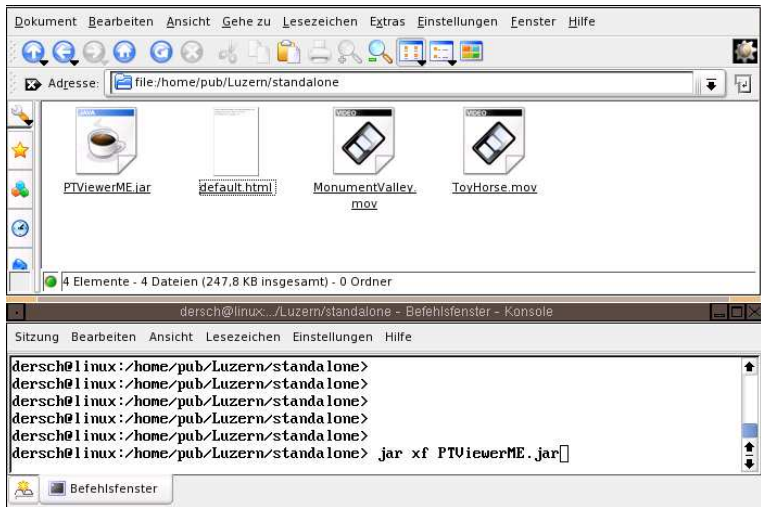


Standalone VR-Project

Requirements:

- Panorama and/or Object Movies *file1.mov, file2.mov, . . .*
- HTML-file *default.html*
- Software: Java Development Kit (*JDK*), plain text editor.
- PTVIEWER-files: *PTViewerME.jar, PTVIEWERME.jad*.

Standalone VR-Project



Standalone VR-Project

The image shows a Linux desktop environment with two windows open. The top window is a file manager displaying the contents of the directory `file:/home/pub/Luzern/standalone`. The directory contains several folders and files:

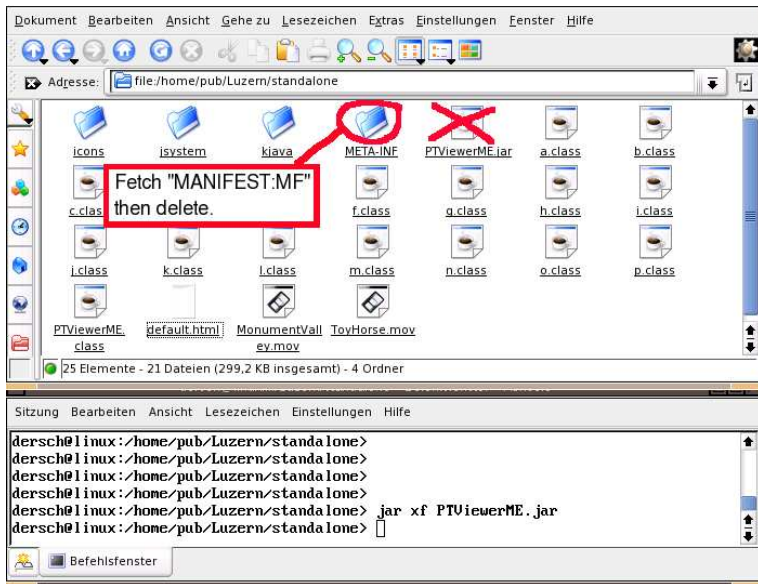
- folders: `icons`, `isystem`, `kiava`, `META-INF`
- files: `PTViewerME.jar`, `a.class`, `b.class`, `c.class`, `d.class`, `e.class`, `f.class`, `g.class`, `h.class`, `i.class`, `j.class`, `k.class`, `l.class`, `m.class`, `n.class`, `o.class`, `p.class`
- other files: `PTViewerME.class`, `default.html`, `MonumentVall.ev.mov`, `ToyHorse.mov`

The status bar at the bottom of the file manager indicates: 25 Elemente - 21 Dateien (299,2 KB insgesamt) - 4 Ordner.

The bottom window is a terminal window titled "Befehlsfenster" showing the following commands and output:

```
dersch@linux:/home/pub/Luzern/standalone>  
dersch@linux:/home/pub/Luzern/standalone>  
dersch@linux:/home/pub/Luzern/standalone>  
dersch@linux:/home/pub/Luzern/standalone>  
dersch@linux:/home/pub/Luzern/standalone> jar xf PTViewerME.jar  
dersch@linux:/home/pub/Luzern/standalone> █
```

Standalone VR-Project



Dokument Bearbeiten Ansicht Gehe zu Lesezeichen Extras Einstellungen Fenster Hilfe

Adresse: file:/home/pub/Luzern/standalone

icons isystem kiava **META-INF** ~~PTViewerME.jar~~ a.class b.class

c.class f.class g.class h.class i.class

j.class k.class l.class m.class n.class o.class p.class

PTViewerME.class default.html MonumentVall ToyHorse.mov
ev.mov

25 Elemente - 21 Dateien (299,2 KB insgesamt) - 4 Ordner

Sitzung Bearbeiten Ansicht Lesezeichen Einstellungen Hilfe

```
dersch@linux:/home/pub/Luzern/standalone>
dersch@linux:/home/pub/Luzern/standalone>
dersch@linux:/home/pub/Luzern/standalone>
dersch@linux:/home/pub/Luzern/standalone>
dersch@linux:/home/pub/Luzern/standalone> jar xf PTViewerME.jar
dersch@linux:/home/pub/Luzern/standalone> █
```

Befehlsfenster

Standalone VR-Project

The image shows a file manager window displaying the contents of a standalone project directory. The directory contains several folders and files:

- folders: icons, isystem, kiava
- class files: a.class, b.class, c.class, d.class, e.class, f.class, g.class, h.class, i.class, j.class, k.class, l.class, m.class, n.class, o.class, p.class, PTVIEWERME.class
- html file: default.html
- other files: MANIFEST.MF, MonumentVall, ToyHorse.mov

Below the file manager, a text editor window titled "MANIFEST.MF [Geändert] - Kate" is open, displaying the following content:

```

Manifest-Version: 1.0
MicroEdition-Configuration: CLDC-1.1
MIDlet-Name: PTVIEWERME
Created-By: 1.4.2_05 (Sun Microsystems Inc.)
MIDlet-Vendor: Unknown
MIDlet-Permissions: javax.microedition.io.Connector file read
Zeile: 3 Spalte: 23 Einf NORM MANIFEST.MF
  
```

Standalone VR-Project

The screenshot shows a file manager window with the following details:

- Menu:** Dokument, Bearbeiten, Ansicht, Gehe zu, Lesezeichen, Extras, Einstellungen, Fenster, Hilfe
- Address Bar:** file:/home/pub/Luzern/standalone
- Files:**
 - folders: icons, isystem, kiava
 - class files: a.class, b.class, c.class, d.class, e.class, f.class, g.class, h.class, i.class, j.class, k.class, l.class, m.class, n.class, o.class, p.class, PTViewerME.class
 - other files: PTViewerME.jar, default.html, MANIFEST.MF, MonumentVall, ToyHorse.mov
- Status Bar:** 25 Elemente - 22 Dateien (452,5 KB insgesamt) - 3 Ordner
- Terminal (Befehlsfenster):**

```

Sitzung Bearbeiten Ansicht Lesezeichen Einstellungen Hilfe
b.class      f.class      j.class      MANIFEST.MF      p.class
c.class      g.class      jsystem     n.class           PTViewerME.class
d.class      h.class      k.class     MonumentValley.mov PTViewerME.jar
default.html i.class      kjava      n.class           ToyHorse.mov
dersch@linux:/home/pub/Luzern/standalone> jar cfm PTViewerME.jar MANIFEST.MF *
dersch@linux:/home/pub/Luzern/standalone> █

```

Standalone VR-Project

The screenshot shows a file manager window and a text editor window. The file manager window displays the directory `file:/home/pub/Luzern/Midlet` containing two files: `PTViewerME.jar` and `PTViewerME.jad`. The text editor window, titled `PTViewerME.jad [Geändert] - Kate`, shows the following content:

```

MIDlet-1: PTVIEWERME, PTVIEWERME.png, PTVIEWERME
MIDlet-Jar-Size: 191456
MIDlet-Jar-URL: PTVIEWERME.jar
MIDlet-Name: PTVIEWERME
MIDlet-Permissions: javax.microedition.io.Connector.file.read
MIDlet-Vendor: Unknown
MIDlet-Version: 1.0
MicroEdition-Configuration: CLDC-1.1
MicroEdition-Profile: MIDP-2.0

```

The status bar at the bottom of the text editor indicates `Zeile: 2 Spalte: 23` and `PTViewerME.jad`.

Installation

Standalone Projects

- Deploy JAR (application/java-archive) and JAD (text/vnd.sun.j2me.app-descriptor) on webserver.
- Point cellphone to JAD (Menu item: *Program Download*)
- Local install (USB, Bluetooth, IrDA, ...)

Separate Viewer and VR-files

- Viewer Installation (options see above)
- VR-files installation to memory card (like other media).
- Set permissions for file access. (Menu item: *Program options*).

Remarks

Standalone Projects

Pro Simple installation, no file access problems.

Contra Limited space, difficult preparation.

Separate Viewer and VR-files

Pro Unlimited space, simple preparation.

Contra Difficult installation, file access permissions required.

Future Extensions

- Standard VR-features.
- Mobile device features (GPS)