

# PTViewerME

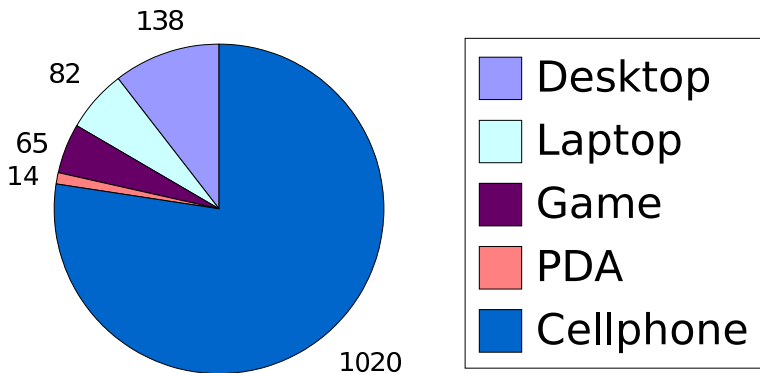
## VR-Viewer for Mobile Devices

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PanoTools Meeting  
Luzern 2007

# VR Playback Devices - World Sales 2006<sup>1</sup> (Mio Units)



<sup>1</sup>CBC-News, Computer Industry Almanac Inc, [journal.pcvconsole.com](http://journal.pcvconsole.com)

# Outline

## 1 Technology

- Overview
- Schematics
- Demonstration

## 2 Requirements

- Device
- Images

## 3 Files

- Image Container
- VR Container
- Standalone Projects

## 4 Installation

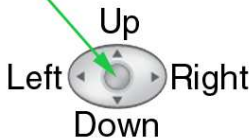
## 5 Remarks

# PTViewerME - Panoramas on Cellphones



Panorama

Zoom In/Out

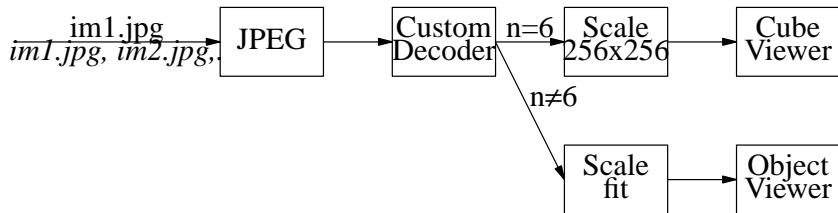


Object

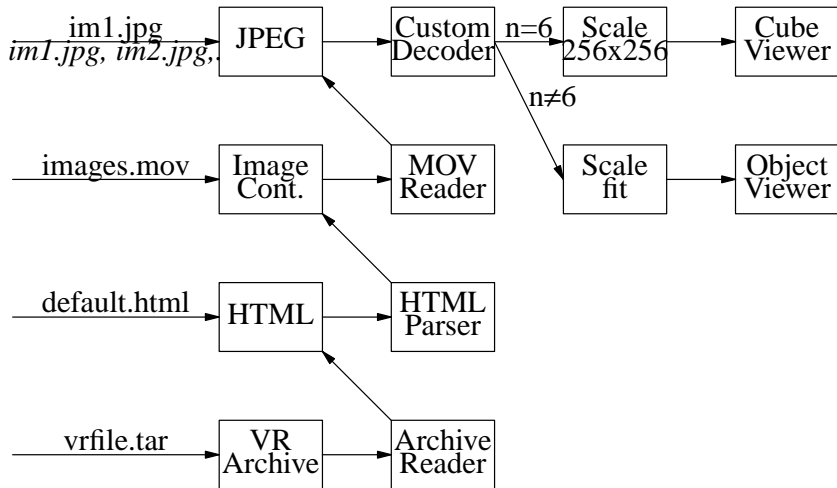
# PTViewerME - Features

- 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>

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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<sup>2nd Ed</sup>



*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>	<p>Capabilities make the device suited to both mobile lifestyle and business applications.</p>	
<p><b>Programs</b></p> <p>Forum Nokia Launchpad Forum Nokia PRO Forum Nokia Champion</p>	<p>Nokia 6230i Technical Specs</p> <p><b>Operating System:</b> Nokia OS</p>	<p><a href="#">Search by feature &gt;</a></p> <p><b>Tools</b></p>
<p><b>Go To Market</b></p> <p>Operators Aggregators Enterprise Nokia Sales Channels</p>	<p><b>Developer Platform:</b> Series 40 Developer Platform 2.0</p> <p><b>Java Technology:</b> 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>The main Tools &amp; SDKs page <a href="http://www.forum.nokia.com/tools">www.forum.nokia.com/tools</a> provides all the tools &amp; SDKs in an easy to access form. The page also includes Getting Started -articles giving an overview of the tools and SDKs.</p> <p><b>Nokia Series 40 Theme Studio</b> 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>
<p><b>Communities</b></p> <p>Discussion Boards Blogs Wiki</p>	<p><b>Browser:</b> WAP 2.0 XHTML over TCP/IP</p>	<p><b>Documents</b></p> <p><a href="#">Series 40 Developer Platform: FAQ</a> This document answers the most frequently asked questions from developers and business managers regarding the Series 40 Developer Platform, including recent enhancements.</p>
<p>Regional web sites Chinese Japanese South-East Asia and Pacific</p>	<p><b>Messaging:</b> MMS+SMIL SMS</p>	<p><a href="#">Series 40 Developer Platform: Introductory White Paper</a> 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><b>Digital Rights Management:</b> OMA DRM v1.0</p> <p><b>Delivery Method:</b> .....</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><b>Java Technology:</b></p> <ul style="list-style-type: none"> <li>JSR 75 FileConnection and PIM API</li> <li>CLDC 1.1</li> <li>Nokia UI API</li> <li>JSR 82 Bluetooth API (No OBEX)</li> <li>JSR 184 Mobile 3D Graphics API</li> <li>MIDP 2.0</li> <li>JSR 185 JTWI</li> <li>JSR 135 Mobile Media API</li> <li>JSR 120 Wireless Messaging API</li> </ul>
<p><b>Programs</b></p> <p>Forum Nokia Launchpad Forum Nokia PRO Forum Nokia Champion</p>	<p>Nokia 6230i Technical Specs</p> <p><b>Operating System:</b> Nokia OS</p> <p><b>Developer Platform:</b> Series 40 Developer Platform 2.0</p> <p><b>Java Technology:</b></p> <ul style="list-style-type: none"> <li>JSR 75 FileConnection and PIM API</li> <li>CLDC 1.1</li> <li>Nokia UI API</li> <li>JSR 82 Bluetooth API (No OBEX)</li> <li>JSR 184 Mobile 3D Graphics API</li> <li>MIDP 2.0</li> <li>JSR 185 JTWI</li> <li>JSR 135 Mobile Media API</li> <li>JSR 120 Wireless Messaging API</li> </ul>	
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<p><b>Communities</b></p> <p>Discussion Boards Blogs Wiki</p>		
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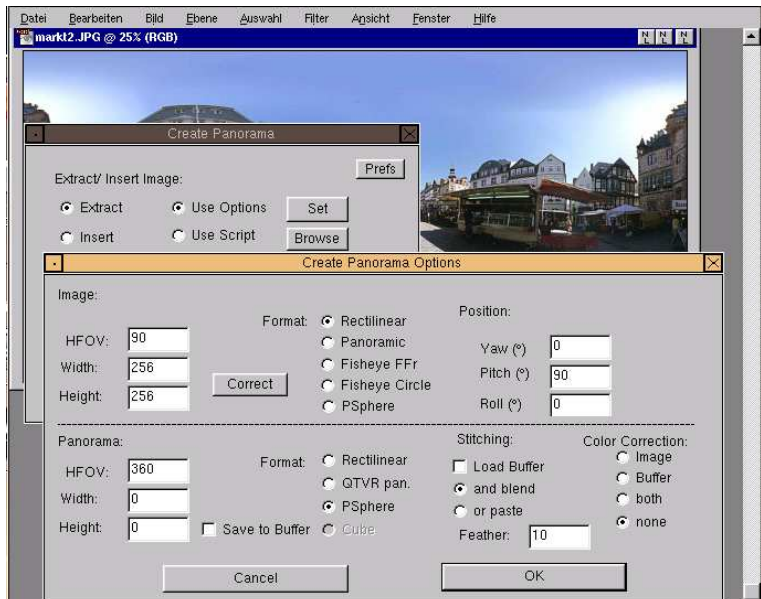
<http://www.forum.nokia.com/devices>

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

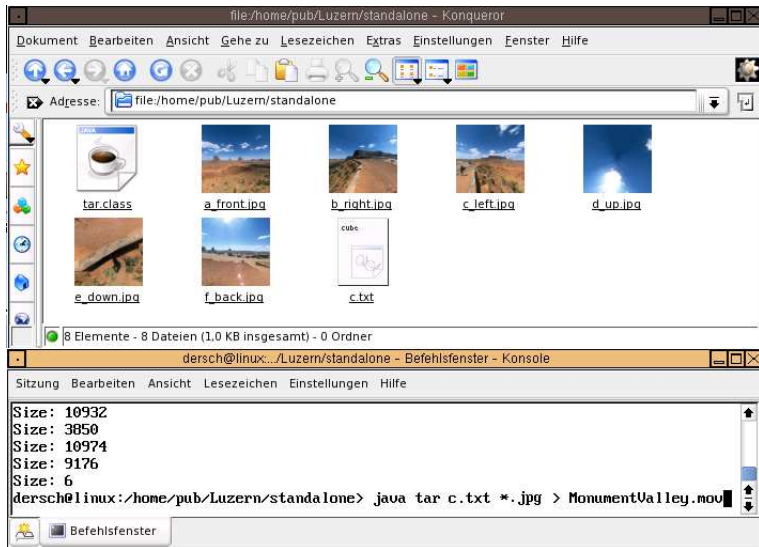
**Primary Screen Display:**  
Resolution: 208 x 208  
Color Depth: 16 bit

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

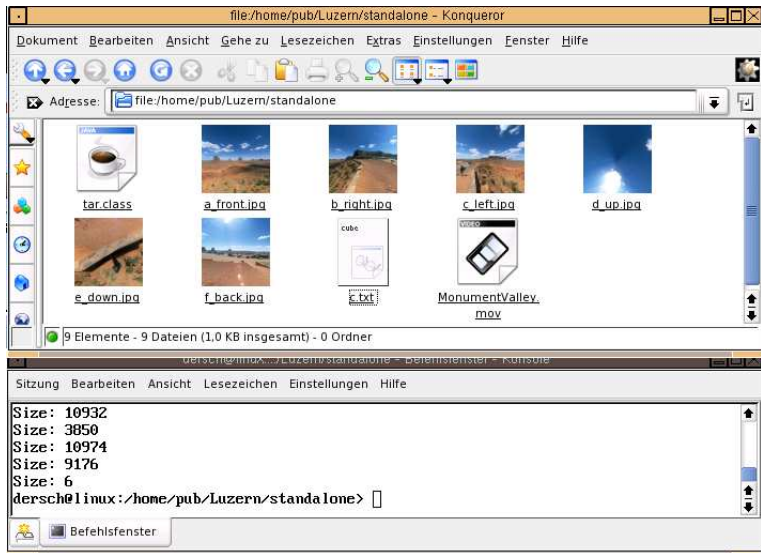
# Cubic Face Images



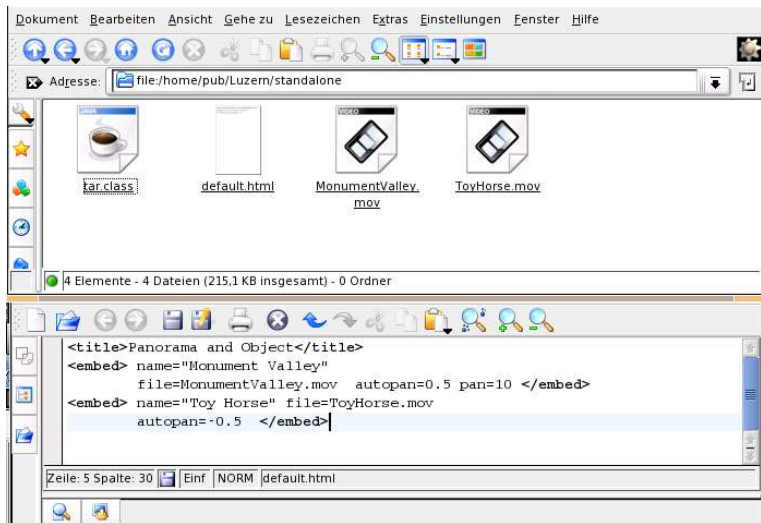
# Image Container



# Image - Container



# VR Container



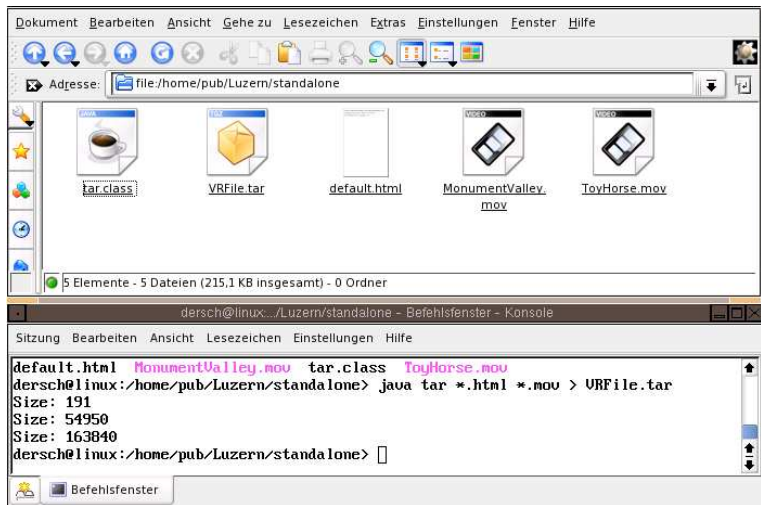
# Supported HTML - Tags

- 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

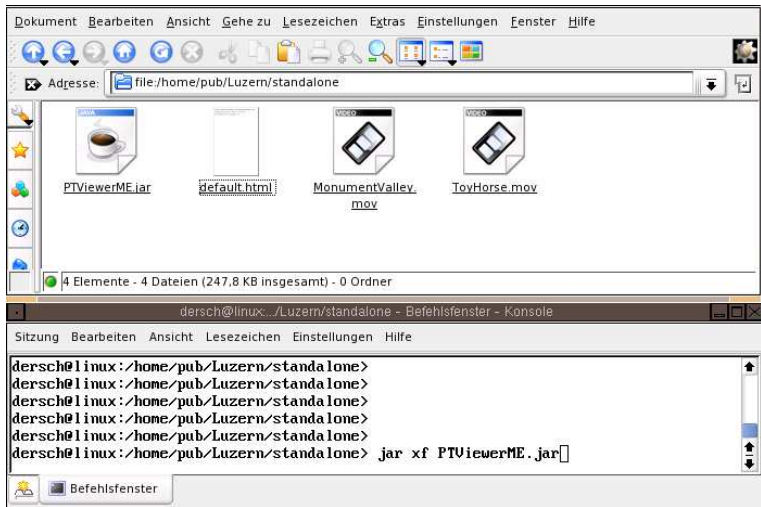


# Standalone VR-Project

## 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

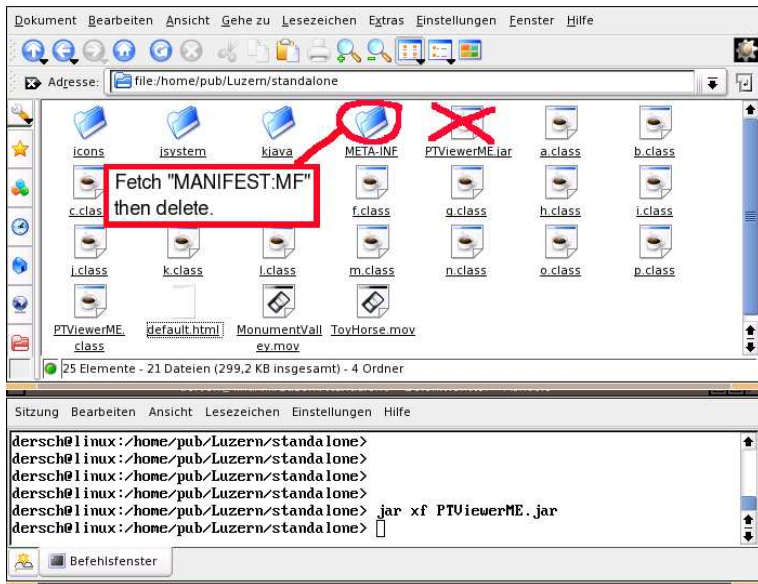
The image shows a Linux desktop environment with two windows open. The top window is a file manager displaying the contents of the directory `file:/home/pub/Luzern/standalone`. The directory contains several folders and files:

- 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`
- files: `PTViewerME.class`, `default.html`, `MonumentVall.ev.mov`, `ToyHorse.mov`

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

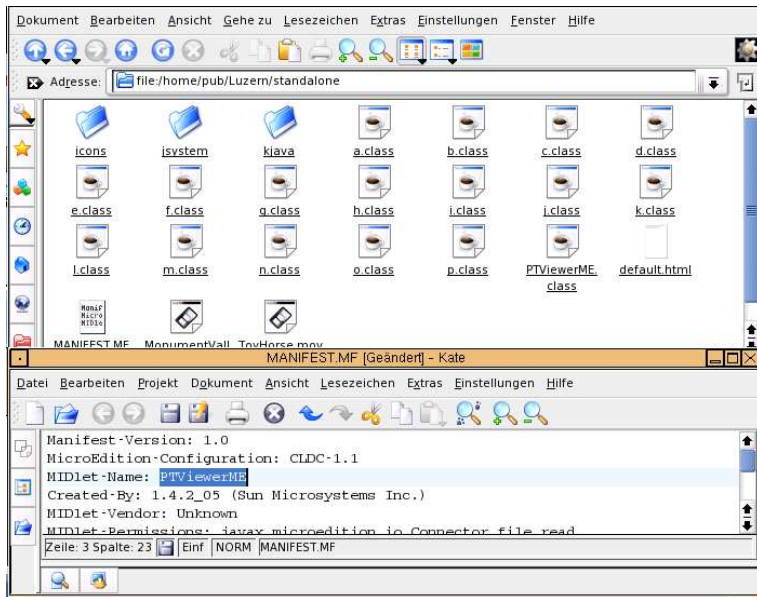
25 Elemente - 21 Dateien (299,2 KB insgesamt) - 4 Ordner

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



# Standalone VR-Project

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

- Address Bar:** file://home/pub/Luzern/standalone
- Files:**
  - Directories: 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
  - Jar file: PTViewerME.jar
  - Other files: default.html, MANIFEST.MF, MonumentValley, ToyHorse.mov
- Status Bar:** 25 Elemente - 22 Dateien (452,5 KB insgesamt) - 3 Ordner
- Terminal Window (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 code editor window. The file manager window displays the file `PTViewerME.jar` in the directory `file:/home/pub/Luzern/Midlet`. The code editor window, titled `PTViewerME.jar [Geändert] - Kate`, shows the following metadata for the file:

```

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 code editor indicates the cursor is at `Zeile: 2 Spalte: 23` in the file `PTViewerME.jar`.



# 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)