

# Mobile and Wireless Systems Programming

## MMAPI (JSR 135) Mobile Multimedia API



## 1 Introduction

## 2 Packages

- javax.microedition.media
- javax.microedition.media.control
- javax.microedition.media.protocol

## 3 MMAPI features

- Properties
- Supported contents
- Supported protocols

## 4 Player

- Simple Audio Player
- Player Life-Cycle
- The MMAPI Architecture
- Video Player

## 5 Camera

## 6 Conclusion

- Optional API for that supports multimedia applications on J2ME-enabled devices
- Very flexible for manufacturers (free to implement protocols and formats)
- Nightmare for developers : which protocols and formats for every mobile ?
- Hardware dependant (camera, video...)

- **Interfaces**

- Control
- Controllable
- Player
- PlayerListener
- TimeBase

- **Classes**

- Manager

- **Exceptions**

- MediaException

## • Interfaces

- FramePositioningControl
- GUIControl
- MetaDataControl
- MIDIControl
- PitchControl
- RateControl
- RecordControl
- StopTimeControl
- TempoControl
- ToneControl
- VideoControl
- VolumeControl

- **Interfaces**
  - SourceStream
- **Classes**
  - ContentDescriptor
  - DataSource

- **microedition.media.version** : version of MMAPI (1.0 or 1.1)
- **supports.recording** : true if audio and/or video capture is supported
- **streamable.contents** : list of supported media types if MMAPI supports streaming of media data
- **supports.mixing** : true if audio media data can be mixed
- **supports.audio.capture** : true if audio can be captured
- **audio.encodings** : the supported formats for recording audio
- **supports.video.capture** : true if video capture is supported
- **video.encodings** : the supported formats for recording video content
- **video.snapshot.encodings** : the list of supported formats for taking snapshots with the camera

```
public static String[] getSupportedContentTypes(String protocol)
```

- Return the list of supported content types for the given protocol
- protocol must be a valid one (http, rtsp, capture...)
- If protocol == null, all the supported content types will be returned
- Example : audio/wav, video/mp3, application/text...

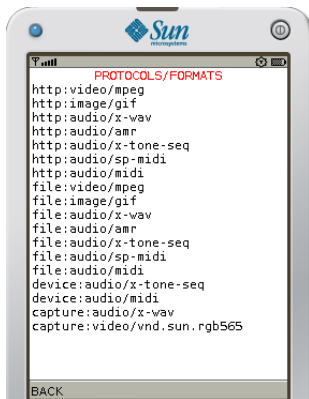


```
public static String[] getSupportedProtocols(String content_type)
```

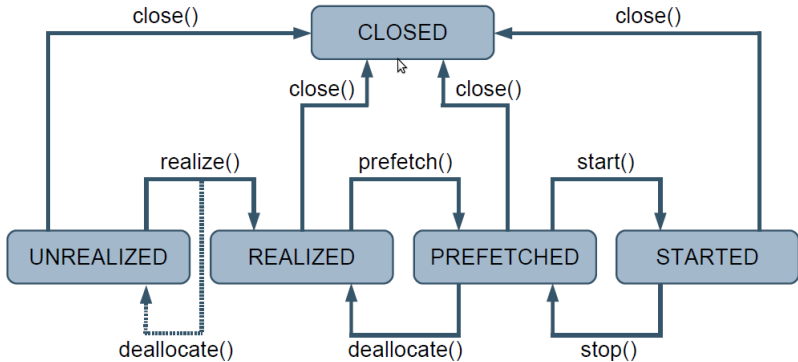
- Return the list of supported protocols for content\_type
- Example : for content\_type = video/mp3, it will returns http, rtsp, capture...

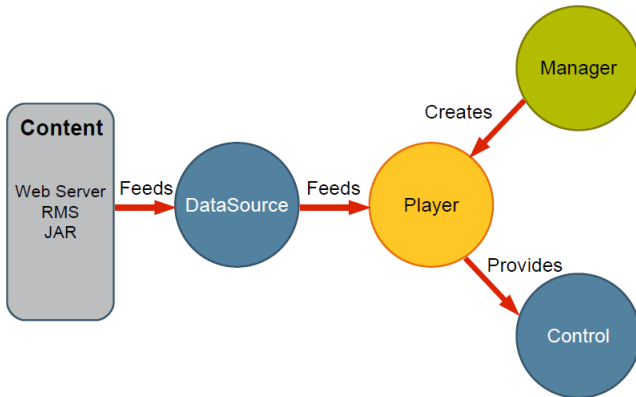
## Contents + Protocols

Get supported content for each supported protocol



```
try {
    Player player =
        Manager.createPlayer(
            getClass().getResourceAsStream("music.wav"),
            "audio/x-wav");
    player.start();
} catch (IOException e) {
    e.printStackTrace();
} catch (MediaException me) {
    me.printStackTrace();
}
```





```

Player player = null;
VideoControl vidc = null;

public void open() {
    try {
        if (player == null) {
            if (m_currentState == EMBEDDED) {
                InputStream ins = getClass().getResourceAsStream("/video/monster.3gp");
                player = Manager.createPlayer(ins, "video/3gpp");
            } else if (m_currentState == CAM) {
                player = Manager.createPlayer("capture://video");
            } else if (m_currentState == HTTP) {
                player = Manager.createPlayer("http://...fr/monster.3gp");
            } else if (m_currentState == RTSP) {
                player = Manager.createPlayer("rtsp://...:554/monster.3gp");
            }
        }
        player.realize();
        if ((vidc = (VideoControl) player.getControl("VideoControl")) != null) {
            vidc.initDisplayMode(VideoControl.USE_DIRECT_VIDEO, this);
            vidc.setDisplaySize(width, height);
            vidc.setVisible(true);
        }
    } catch (IOException ioe) {
        ioe.printStackTrace();
    } catch (MediaException me) {
        me.printStackTrace();
    } finally {
        close();
    }
}

```

- Special locator : "capture ://video"
- VideoControl to display on the screen
- VideoControl.getSnapshot(String imageType) (PNG is the default type)
- video.snapshot.encodings

- MMAPI Demo in the WTK
- Some links :
  - <http://java.sun.com/javame/reference/apis/jsr135/>
  - <http://developers.sun.com/mobility/midp/articles/mmapioverview/>