
# Guidelines for the Design of Technology-Enhanced Science Education Learning Content

## OpenScienceResources Mobile Tagging Tool Manual

**OpenScienceResources:**
Towards the development of a Shared Digital Repository for Formal and Informal Science Education

eContentPlus

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eContentPlus

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# 1. Mobile Tagging Introduction

Mobile tagging is the process of providing data on mobile devices, commonly through the use of data (such as a URL) encoded in a two-dimensional barcode, meant to be read and inputted using a camera phone.


**Figure 1:** *Mobile tagging*

There are a lot of different 2D barcodes which can be used for mobile tagging. The first Code in Figure 2 (Figure 2a) is the so called QR Code. A QR Code is a matrix code (or two-dimensional bar code) created by Japanese corporation Denso-Wave in 1994. The "QR" is derived from "Quick Response", as the creator intended the code to allow its contents to be decoded at high speed. At the moment it is the standard for mobile tagging worldwide. QR Code is open in the sense that the specification of QR Code is disclosed and that the patent right owned by Denso Wave is not exercised.


**Figure 2:** *Examples of 2D barcodes for mobile tagging*

# 2. Accessing Mobile Information

Point with the camera of the mobile phone on a QR Code. For taking a picture and decoding the QR Code special QR Code reader software on the mobile phone is necessary. After the decoding the QR Code the mobile phone will open the website/mobile application which was referenced inside the code.

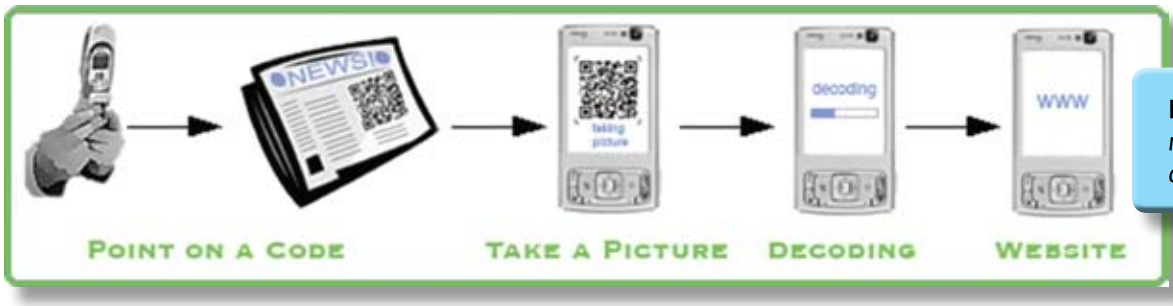


**Figure 3:** *Accessing mobile information content*

To access the "mobile OSR eLearning applications" the user must have a mobile Phone with:

- Adobe Flash or Flash Lite Player installed (already preinstalled on most new smart phones)
- QR Code Reader (already preinstalled on most new smart phones)
- Mobile Internet Access (via your phone provider or WLAN)

**Please note:**
Apple refuses to allow Flash applications on iPhones. Therefore it is not possible to use the iPhone to access these eLearning applications.

## 2.1 Supporting Software

### 2.1.1 Adobe Flash Player and Flash Lite Player

Adobe Flash Lite is a lightweight version of Adobe Flash Player. If the Flash player is not preinstalled on your mobile phone you can download the free Flash Player / Flash Player Lite directly from the Adobe Website (http://www.adobe.com/products/flashlite/) for a lot of new smartphones.

### 2.2.2 QR Code mobile Reader

A lot of different free mobile QR Code Readers exist. On most new mobile smart phones a QR Code Reader is already preinstalled on the device. If there is no QR Code reader installed one can be downloaded from the following developers:

- Kaywa: http://reader.kaywa.com/
- iNigma: http://www.i-nigma.com/Downloadi-nigmaReader.html
- BeeTag Reader: http://www.beetagg.com/supportedphones/

# 3. QR Code Creation

In order to generate QR Codes for your material, one can use one of the several free "QR Code Generators".

One of them is the EasyTag QR Generator from the FH JOANNEUM -University of Applied Sciences in Austria and available at: http://easytag.fh-joanneum.at/

With this generator a user can directly upload and generate a QR Code to on-line files or web site links using the following procedure.

To create a QR Code for an on-line file or a web site link (Figure 4) go to http://easytag.fh-joanneum.at/ then:

To create a QR Code for a file

- Click the "Browse" button under the "From File" section in order to attach a file. The user then will be prompted to select the desired file from his PC and click "Open". Automatically then the file starts uploading in the portal of Joanneum University. (Figure 4a)
- Provide a description of the file in the "Comment" section (Figure 4a)
- Click on the "Create QR Code" button and the QR Code icon appears. (Figure 4a)
- Right Click on the icon and select "Save Image as" to save the icon (Figure 5)

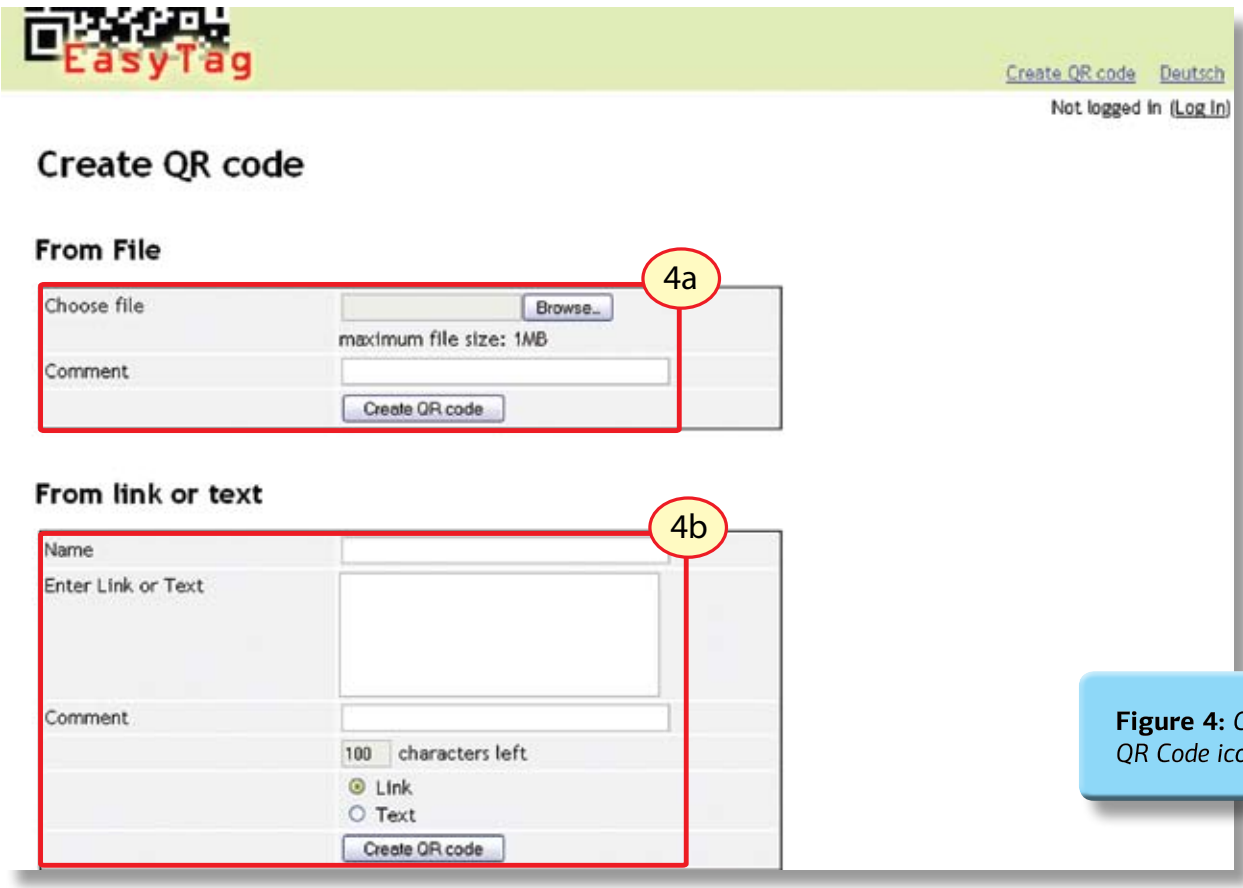


**Figure 4:** *Creating a QR Code icon*

To create a QR Code for a web site link or short text

- Enter the name of the link or the text in the “Name” section (Figure 4b).
- Enter the web site link or the text in the “Link/text” section (Figure 4b)
- Provide a description of the web site link/text in the “Comment” section (Figure 4b)
- Click on the “Create QR Code” button and the QR Code icon appears. (Figure 4b)
- Right Click on the icon and select “Save Image as” to save the icon (Figure 5)


**Figure 5:** *A completed QR Code icon*

**Tips and tricks for QR Code reading:**

- Try to have enough light to capture the QR code in a good quality
- Turn the macro mode at the mobile camera ON if possible
- Normally 10 to 15 cm is the best distance between QR code and the mobile camera

# 4. Examples of Mobile Tagging using Educational Resources

## 4.1 Mobile OSR e-learning content

To access content on the OSR portal using a mobile phone please do the following:

- Start the QR Code reader on the mobile phone
- Read the QR Code of (Figure 6) with the camera of the mobile phone
- Now let the reader open the online eLearning Content

A screen like the one from (Figure 7) will appear on the mobile phone and then you can access the content from the Natural Museum of Crete.

**Figure 6:** *The QR Code for accessing OSR Content*


**Figure 7:** *OSR Mobile Educational Content*

## 4.2 The Mobile CERN E-Learing Applications

Another mobile e-Learning application the user can try is the "mobile CERN" handy website that can be accessed either by typing the URL http://mocern.dmt.fh-joanneum.at/mobile/ or by using the QR Code from Figure 8: The mobile phone should now present the moCERN mobile website (Figure 9)

**Figure 8:** *The QR Code for accessing Mobile CERN Content*


**Figure 9:** *The moCERN mobile website*