The annotation of images through tagging at the University of Edinburgh.
Like the engineers who worked on the Forth Rail Bridge we had a blue print of what we wanted when we built our tagging games, mainly the collection of additional subject metadata. This was to enhance the metadata records for our image collections, some of which are very well described, others less so.
A few metadata tags added to a digitised image can help users find and understand the image.
Like the Forth Rail Bridge that famously once the red paint job was finished, needed beginning again. The tagging and management of these annotations within the collections of the University Collections at Edinburgh is a repetitive task.

Our tags are routinely imported back into the ‘golden copy’ cataloguing systems.
However, like the new Queensferry Crossing our workflow has gaps.
Why have we collected annotations?

- Enhance metadata
- Improve search
- Improve the user experience
- Increase discoverability of images
- Engage with communities
The metadata for this image in our Luna image repository relates to the Inculabula the image was taken from, nowhere in the metadata is it catalogued that this is an image of ...
Noah's Ark, neither are any of the animals catalogued within the metadata
This is another example from our art collection, which has basic metadata record.
These are the tags that users of our Library Labs metadata games and have been through the workflow to be displayed alongside the item in our art collection website.
Here is a basic overview of the workflow for the tags we have gathered for images at the University of Edinburgh.

1) Users view and image and add tags
2) Once a tag has been added it is added to the moderation pool, for other to up or down vote
3) When tags are exported for import into other Library systems some tags are removed from the import list
4) The remaining tags with up votes are imported into the other systems, made viewable online and used within search.
This is our ‘metadata games’ user interface where users add tags for an image.
This is where users voting on tags, once a user has added tags for 10 images, they are taken to this screen to vote on tags added by other users.

These votes determine which tags are exported for import into other Library systems.
Selection of tags for import

- Retain all content in the tagging platform
- Only import content that has been up-voted
- Automatically discount:
  - Numbers
  - Curatorial selections
  - Naughty words
  - Sentences
- Repeat

This is an iterative process, all tags remain within the games database, but a subset are imported into the cataloguing systems, Luna and Vernon.
Possible additional steps:

- Automatically up vote duplicates
- Trusted users (skip steps)
- Creation of linked data
  - Subject parsing of tags
  - Geoname parsing
- Image processing for object detection
- Natural Language Processing

We recognise that there are further steps we could add to our workflow

From the straight forward automatic upvoting where users enter duplicate tags and skipping moderation for trusted users (e.g. other library staff)
To using tags to lookup against authority indexes to create linked data for our metadata records, for subject headings, names and locations
We could process the images for object detection and then compare with user created tags
Use NLP of descriptive metadata where it exists to produce suggested tags that could be fed into the moderation loop and also potential displayed for users to attach to an area of the image
One tag - many systems

From: Library Mapping MySQL database

To:

- Image Repository (LUNA Imaging)
- Museum Content Management System (Vernon)
- Repository System (DSpace & SOLR)
- Collections Online (Skylight)

Tags are exported from the metadata games MySQL database into the other systems that manage the image metadata and make them available online to users and for search.
When I spoke at Open Repositories last June or metadata was this, feeding tags into the DSpace we use behind the scenes for our public collections online websites, however
Workflow from Library Labs metadata games into DSpace that was in place for Open Repositories 2015
Our workflow since then has been to import the tags into our cataloguing system for images, some images are catalogued into Vernon our museum collections management system for other digitised images are catalogued directly into Luna or image repository. Vernon data is imported into DSpace.

The workflow was updated due to the ability to keep the tags separate from curatorial metadata, ability to refresh the data and curatorial acceptance of the tags that had already been imported into the DSpace and were visible online.
Tags in Vernon Collection Management System

Used for museum items in the University collections

e.g. Musical Instruments and Art
Tags to LUNA Workflow by Scott Renton
### Tags displayed as Dublin Core within the DSpace UI for our hidden DSpace that sites behind collections.ed

Tags are kept separate from the other curatorial metadata.
The same tags in the DSpace SOLR index.
Tags for discovery

Tags displayed as a facet in the iconic items website http://collections.ed.ac.uk/iconics/search
Tags within
Collections Online
http://collections.ed.ac.uk/iconics

Tags displayed on an item page http://collections.ed.ac.uk/iconics/record/51402
Tags within the Collections Online Art
http://collections.ed.ac.uk/art
We would like to update our metadata games to enable users to tag segments of an image using IIIF urls.

**IIIF for annotation of segments**
- Change to the workflow
- Annotation server
- Change to:
  - Search (across and in an item)
  - Discovery
  - Results
Tagging of segments of images
- Pros - pull out segments
- Annotation on screen
- Options for users to see tags and hide them
- Search within the image as well as across a collection

Issues
- Change the nature of tagging
- Still need image level and segment level?
- More complicated data structure
- Not easy to slot into existing metadata or systems
- Requires an annotation store
Future plans for annotation

- Polyglot project for archive collections
  - Transcription
  - Translation
  - Requirements gathering stage
  - Use in teaching and learning, incl Palaeography
  - Experiments with Pybossa and Zooniverse
    https://www.zooniverse.org/projects/rhosker/polyglot/
  - Investigating IIIF annotation tools for transcription
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http://librarylabs.ed.ac.uk/
http://collections.ed.ac.uk/
http://images.is.ed.ac.uk/
https://github.com/UoEMainLibrary
http://libraryblogs.is.ed.ac.uk/