Archiving Dossier Narrative
Digital Sigillography Resource, version 1
Launch Date: September 1, 2015
Archive Date: July 15, 2021

Project Catalogue record URL: <https://osf.io/preprints/bodoarxiv/nrh8x>
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Current Project URL: www.digisig.org

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Abstract

The DIGISIG project, begun in 2013, initially aimed to address a long-standing challenge for sigillographers. Hundreds of repositories in England hold medieval seals, but in 2013 there was no single resource that could tell a researcher where any particular seal was located. DIGISIG is designed to enable researchers not only to discover seals, but to analyze, compare and combine information from multiple reference works. These capacities may transform sigillography by enabling scholars to consider long-standing problems in the history of sealing practices, based on a fuller understanding of the evidence.

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Website Tables

1. Information in Digisig

Digisig works with information that is either in the public domain or has been graciously shared with Digisig by its authors.

Printed works

W. de Gray Birch, Catalogue of Seals in the Department of Manuscripts in the British Museum, 6 vols. (London: Longman and co., 1887-1900)

R. H. Ellis, Catalogue of Seals in the Public Record Office: Monastic Seals (London: H.M.S.O., 1986)

R. H. Ellis, Catalogue of Seals in the Public Record Office: Personal Seals, 2 vols. (London: H.M.S.O. 1978-81)

W. Greenwell and C. H. Hunter Blair, Catalogue of Seals in the Treasury of the Dean and Chapter of Durham (Newcastle: 1911-1921)

J. A. McEwan, Seals in Medieval London, 1050-1300: A Catalogue (London: London Record Society, 2016)

A. B. Tonnochy, Catalogue of British Seal Dies in the British Museum. (London: British Museum, 1952)

Born-digital datasets

P.D.A. Harvey and T.M. Chalmers, Computer Catalogue of Seals in the Public Record Office, London [computer file]. London: The National Archives [distributor], 1996

Portable Antiquities Scheme [website] (<https://finds.org.uk/>), ed. The Portable Antiquities Scheme (London: The British Museum)

Seals in Medieval Wales and the Welsh Marches, 1200-1500 [computer file] (2012, funded by the Arts and Humanities Research Council (AH/G010994/1): principal investigator, Phillipp Schofield; co-investigator, Sue Johns; senior research officer, Elizabeth New, and research officer, John McEwan

J. A. McEwan, Seals in Sussex [computer file] (2015, with support from the John Brockway Huntington Foundation Fellowship, Huntington Library, California)

In addition to these formal and structured ‘sigillographic’ sources, I also use information drawn from the public websites of the repositories who hold the original documents or seal matrices. I might use this to information, for example, to clarify the date of the seal. This is particularly important when the information is omitted from the original ‘sigillographic’ work.

The main repositories:

British Library, London
The National Archives, Kew, London
National Library of Wales, Aberystwyth
London Metropolitan Archives, London
East Sussex Record Office
Saint Bartholomew's Hospital Archives, London
Cheshire Archives and Local Studies, Chester
Herefordshire Archives Service, Hereford
Shropshire Archives, Shrewsbury
Gwynedd Archives, Caernarfon Record Office
Bangor University, Archives and Special Collections
Gwent Archives
Durham University Library

Photographs of some seals were also drawn from data made available by the Models of Authority Project: Models of Authority [website] (<https://www.modelsofauthority.ac.uk>), accessed 1 February 2018

2. Can I use Digisig information in my own project/research?

Digisig v.1 is an experimental search tool rather than a data repository, so researchers are advised to be cautious about using bulk data taken from Digisig.

Digisig aims to explore the potential of digital sigillographic information systems and ‘large’ sigillographic datasets. For this purpose, the author assembled a large dataset. However, many of the sources were only partially digitized. The gaps and omissions in the data are difficult to discern without reference to the original sources. Consequently, if you are looking for ‘raw’ sigillographic data to use in your own research, including both textual and photographic data, you are advised to consult the original sources. This is to ensure that you are using the most up to date version of the data, that you are using the data in accordance with the terms imposed by its creators, and that your data is complete.

(May 2022)

Digitization work has continued and in some cases reached completion. Researchers looking for data are advised to consult Digisig (v.2), which follows on from Digisig (v.1). Data is available from Digisig (v.2) in RDF format.

3. How does Digisig make these different sources searchable?

To explain how Digisig v.1 works, it is perhaps easiest to start by sketching the intended end result.

Searches

Digisig v.1 aims to enable researchers to perform six main types of searches:

- Shelfmark
- Catalogue Identifier
- Motif Description
- Names
- Places
- Digisig Entity

Shelfmark

Each seal impressions or seal matrix is held by a repository (an archive, library or museum). The seal may form part of a document or some other set of things. The ‘shelfmark’, in Digisig terms, is the identifier that you need to get hold of the seal in a repository. The shelfmark, if you like, is a location in the organization or storage system of the repository where you can find the seal.

Catalogue Identifier

Most published seal catalogues provide each seal with an identifier. A search by catalogue identifier thus enables a researcher to find a particular entry in a particular seal catalogue.

Motif Description

Most seal catalogues provide a detailed textual description of the graphical content of a seal. This might take the form of identifying the main motif and some of the other elements of the design. Enabling researchers to search by ‘motif description’ was enormous challenge from a digitization perspective since extracting this information from the printed catalogues proved to be difficult. Moreover, search results were always unpredictable, because different cataloguers might use different words to describe similar seals.

Names

Seal catalogues tend to identify the person or corporate entity associated with a seal. This query was intended to enable researches to search for particular actors. Drawing this information from the printed catalogues was easier than the motif description, but it was still challenging. The results of this type of search were also problematic because cataloguers identified the same people or corporate entities using different phrases.

Places

Seal catalogues often associate a seal with a place. This phrase would be expressed in the catalogue as a string of words, so place search was, like name search, a search with unpredictable and often unsatisfactory results because cataloguers used different names for the same places. Moreover, cataloguers varied in how precisely they identified a place, for some would associate a seal with a very specific spot, such as a parish, while others used very large

units such as county.

Digisig Entity

The final search offers a clue to the core design principals of Digisig. Influenced by the practices of Linked Open Data, Digisig assigns a unique identifying numbers to all the different entities that make up a seal record. To search by Entity, the researcher needs to know the entity number.

Digitization

To enable researchers to work with information in printed reference works, the printed works must be digitized, but Digisig is not a digitization project. Consequently, the digitization strategy I adopted for Digisig emphasized the information needed to support the six queries (described above).

The compromises and workflow that this strategy entailed is perhaps best illustrated by the case of Walter de Gray Birch's catalogue, which is a multi-volume work with several thousand entries. I took PDFs of the volumes from the Internet Archive (<https://archive.org/>) and used them to generate a machine readable text using Transkribus (<https://readcoop.eu/transkribus>). I then wrote Python scripts that attempted to structure the text as XML. I focused on the shelfmark and cataloguing identifying numbers. Unfortunately, the other information, particularly the motif descriptions, proved difficult to capture because the formatting of the original work is highly inconsistent. Consequently, the digitization of Birch's catalogue remains incomplete. Nonetheless, to ensure that researchers can still access all the information in Birch's catalogue, I wrote a Python script that manufactured an image of each entry. This image preserves the original layout and content of the catalogue entry. As a result, the digitization work made the original catalogue partially searchable, but the information in each entry can still be read by a human researcher.

Database Structure

'Under the hood', so to speak, Digisig is relatively complex. The backend information system is composed of two databases.

The primary database (PostgreSQL) is designed to facilitate the administration of the data. This administrative database has dozens of tables, but there are six core tables. These core tables ensure that information about what the seal cataloguer says about the seal is kept distinct from information about the seal itself, and information about the physical objects that provide evidence for the seal.

Core Tables

Seal Description (what a cataloguer says about a seal)

Seal (the seal)

Face (the face of a seal – since some seals can have two faces)

Seal Manifestation (the way in which the seal is expressed or ‘manifested’ in a physical object)

Support (the object of which the seal manifestation is a feature)

Item (the document or object that contains the part and it is held in a repository)

These core tables are then linked to together using unique identifying numbers.

This structure enables the information manage system to do two crucial tasks:

- 1) Accommodate cases where multiple cataloguers have described the same seal
- 2) Accommodate cases where multiple examples of the same seal (seal impressions, seal matrices, or casts) survive

In addition to these core tables, the administrative database includes tables to allow for controlled vocabulary and the management of spatial, temporal, and nominal information (see diagram below).

E-R Diagram for the Digisig Administrative Database

Website Database

The Digisig website (v.1) uses a MySQL database. This MySQL database is separate from the PostgreSQL database that I used to administer the data.

The MySQL database for Digisig (v.1) has fifteen tables

access
classification_view
dataforgraph_view
entity
face_view
field
gallery_rti
gallery_view
representation_class_view
sealdescription_view
search_view
shelfmark_view

tb_index
user_digisig

The database that supports the website is structured entirely different from the administrative database although it shares the same content. The administrative database is large and complex. Running queries across many tables with tens of thousands of rows is computationally expensive (see Appendix, for the queries). However, the data can be pre-processed. In effect, I executed the table 'joins' in advance to create new tables that contained the data that each query required. I then built the website around these tables. Consequently, the administrative database is not directly incorporated into the website.

A good example is provided 'Dataforgraph_view' and 'Shelfmark_view'.

Dataforgraph_view give researchers some statistics on the contents of the website and those statistics are displayed when the researchers first visits the site. The table is generated by this query:

```
SELECT shelfmark_view.fk_repository AS repository,  
       shelfmark_view.repository_fulltitle,  
       shelfmark_view.id_archoncode,  
       count(shelfmark_view.fk_repository) AS numofcases  
FROM shelfmark_view  
WHERE shelfmark_view.repository_fulltitle <> 'UNKNOWN'::text  
GROUP BY shelfmark_view.fk_repository, shelfmark_view.repository_fulltitle,  
shelfmark_view.id_archoncode  
HAVING count(shelfmark_view.fk_repository) > 49;
```

The resulting table looks like this:

Dataforgraph_view

repository	repository_fulltitle	id_archoncode	numofcases
25	Gwent Archives	218	111
14	Hereford Cathedral Archives	312	196
21	Herefordshire Archive Service	44	99
23	Gwynedd Archives, Caernarfon Record Office	219	88
24	Bangor University, Archives and Special Collections	222	234
1	London Metropolitan Archives	74	1236
28	Portable Antiquities Scheme	1131	4773
18	National Library of Wales	210	1827
5	Saint Bartholomew's Hospital Archives	405	1182

39	Museum of London	389	77
34	Durham County Record Office	32	210
37	British Museum	1131	3237
26	Huntington Library	695	687
12	East Sussex Record Office	179	132
3	British Library	58	23979
27	Durham Cathedral Library	36	7961
40	National Records of Scotland	233	344
7	Canterbury Cathedral Archives	54	61
4	The National Archives	66	9598
20	Cheshire Archives and Local Studies	17	208
11	Oxford University: Magdalen College Archives	458	78
10	Westminster Abbey Muniment Room	119	94
22	Shropshire Archives	166	355

Column 1 is contains Digisig's internal identifying number for the repository

Column 2 is the title of the repository

Column 3 is the 'archon' code for the repository. Archon codes are one system used in the United Kingdom to identify repositories

(<https://www.nationalarchives.gov.uk/help-with-your-research/discovery-help/find-an-archive/#5-find-archives-by-archon-code>).

Column 4 is the number of examples of seal impressions, matrices or casts that are represented in Digisig and are held by the repository.

Although the query that generates this table might seem fairly simple, it is built on top of another more complex query which generates the data that Digisig uses to run 'Shelfmark' queries.

```
SELECT item.pk_item,
       item.shelfmark,
       item.id_item,
       item.fk_repository,
       repository.repository_fulltitle,
       repository.id_archoncode,
       series.fk_connection,
       part.pk_part AS pk_event,
       part.repository_startdate,
       part.repository_enddate,
       part.repository_location,
       part.repository_description,
       part.ui_part_repository AS ui_event_repository,
```

```

connection.connection,
connection.thumb,
connection.medium,
support.pk_support,
support.fk_nature,
nature.nature_name AS nature,
manifestation.pk_manifestation,
manifestation.fk_position,
"position".position_latin,
manifestation.id_manifestation,
face.pk_face,
seal.pk_seal,
seal.id_seal,
contributor.name_first,
contributor.name_last,
representation_view.fk_contributor_creator,
representation_view.fk_access,
representation_view.representation_filename,
representation_view.representation_thumbnail,
representation_view.primacy
FROM "position"
  RIGHT JOIN (manifestation
  LEFT JOIN (nature
  RIGHT JOIN support ON nature.pk_nature = support.fk_nature) ON
manifestation.fk_support = support.pk_support
  LEFT JOIN part ON support.fk_part = part.pk_part
  LEFT JOIN item ON part.fk_item = item.pk_item) ON "position".pk_position =
manifestation.fk_position
  LEFT JOIN repository ON item.fk_repository = repository.pk_repository
  LEFT JOIN series ON item.fk_series = series.pk_series
  LEFT JOIN connection ON series.fk_connection = connection.pk_connection::numeric
  LEFT JOIN representation_view ON manifestation.id_manifestation =
representation_view.fk_digisig
  LEFT JOIN contributor ON representation_view.fk_contributor_creator =
contributor.pk_contributor
  LEFT JOIN face ON manifestation.fk_face = face.pk_face
  LEFT JOIN seal ON face.fk_seal = seal.pk_seal;

```

This query pulls information from the item, part, support, manifestation, face and seal tables, together with further supplementary information from a number of other tables, such as ‘representation’, which holds information about images. All the information is then packaged together into one ‘flat’ table that can be more swiftly processed by the server. Preprocessing the data means that the website runs at the lowest possible computational cost.

Website design

Digisig v.1 was designed so that most of the page views would be generated from a single file (index.php).

The code works by taking information from the header and transforming it into a query. The code snippet (below) illustrates the process. The program recognizes the user wants to run a 'search' and then runs the requested type of search (or all types of search).

```
case 'search' :

    //test to see if the search string has more than 1 character
    if (strlen($term) > 0) {
        $term = str_replace("_", "/", $term);
        // if someone searches 'all fields' run the query for all possible searches
        // otherwise, just run the query on the specified field
        if ($field == "all_fields") {
            $query12 = "SELECT field_url FROM field";
            $query12result = mysqli_query($link, $query12);
            while ($row = mysqli_fetch_array($query12result)) {
                $searchfield = $row['field_url'];
                queryResult($searchfield, $index, $term, $address, $sexact, 0,
$num_result_per_page);
            }
        } else {
            queryResult($field, $index, $term, $address, $sexact, 0, $num_result_per_page);
        }
    }
    break;
```

Alternatively, is the user wants a particular thing – an 'entity' – the code establishes what table – 'view' – needs to be searched to find it and returns the results.

```
case 'entity' :

    # show information about a specific entity

    // first test that we have an entity number and proceed if yes
    if ($id > 0) {
        # 1) determine what view to query using the entity number
        $query6 = "SELECT * FROM entity WHERE entity_code = $entity";
        $query6result = mysqli_query($link, $query6);
        $row = mysqli_fetch_object($query6result);
        $count = mysqli_num_rows($query6result);
        if (isset($row) && $row != null) {
            $column = $row -> entity_column;
```

```
$view = $row -> entity_view;
```

```
# 2) formulate and return the basic search string
```

```
$query8 = "SELECT * FROM $view WHERE $column = $id";
```

```
$query8result = mysqli_query($link, $query8);
```

Then the code formulates some HTML to present the search results and passes that to the user's computer.

Sigillographic workflow

Digisig was designed to support a particular type of research workflow.

Researchers can run queries on various aspects of seals, but once they have located something of interest, they can navigate to other related things.

For example, a researcher begins with a query by 'Name', and locates a seal description (an entry in a seal catalogue) that is relevant. The researcher can then proceed to other seal catalogue entries which describe the same seal, but may provide further, or contrasting, information about the seal. Alternatively, the researcher can identify, from the related 'seal' record, the items that hold impressions of the seal. From these 'item' records, the researcher can then consider the other seals on the items, to begin to establish the first seal's historical context.

Enabling a smooth 'flow' from one entry to another, across seal catalogues descriptions and from records dealing with the content of seals to records address the physical objects and items that preserve the evidence was a main aim of the user interface.

Conclusion

Digisig offers a users the capacity to run particular set of queries. Enabling these queries involves first digitizing many of the sources, organizing them into a structure that separates information about different facets of seals into different tables, then recombining the information from those tables in different ways.

Publications

McEwan, J. A. (2015). "The challenge of the visual: making medieval seals accessible in the digital age." Journal of Documentation **71**(5): 999-1028.

McEwan, J. A. (2016). Seals in Medieval London, 1050-1300: A Catalogue. London, London Record Society.

McEwan, J. A. (2016). Seals in medieval Wales and its neighbouring counties: trends in motifs. Seals and Society in Medieval Wales and its Border Region. E. A. New and P. R. Schofield. Cardiff, University of Wales Press: 13-34.

McEwan, J. A. (2018). "The past, present and future of sigillography: towards a new structural standard for seal catalogues." Archives and Records **39**(2): 224-243.

McEwan, J. A. (2018). "Reflectance Transformation Imaging and the Future of Medieval Sigillography." History Compass: e12477.

McEwan, J. A. (2019). Tout and seals. Thomas Frederick Tout: Refashioning History in the 20th Century. J. T. Rosenthal and C. M. Barron. London, Institute of Historical Research: 185–198.

McEwan, J. A. (2019). Does Size Matter? Seals in England and Wales, ca.1200-1500. A Companion to Seals in the Middle Ages. L. Whatley. Leiden, Brill: 103-128.

Website Files

DigiSig-master\.gitignore
DigiSig-master\.htaccess
DigiSig-master\config
DigiSig-master\css
DigiSig-master\favicon.ico
DigiSig-master\favicon2.ico
DigiSig-master\header.php
DigiSig-master\images
DigiSig-master\include
DigiSig-master\index-backup.php
DigiSig-master\index.php
DigiSig-master\js
DigiSig-master\list.txt
DigiSig-master\logout.php
DigiSig-master\README.md
DigiSig-master\sandbox.php
DigiSig-master\spidergl
DigiSig-master\config\config.php
DigiSig-master\css\digisigSkin.css
DigiSig-master\css\icons
DigiSig-master\css\ui-lightness
DigiSig-master\css\webrtviewer.css
DigiSig-master\css\icons\full.png
DigiSig-master\css\icons\full_on.png
DigiSig-master\css\icons\help.png
DigiSig-master\css\icons\light.png
DigiSig-master\css\icons\light_on.png
DigiSig-master\css\icons\zoomin.png
DigiSig-master\css\icons\zoomout.png
DigiSig-master\css\ui-lightness\images
DigiSig-master\css\ui-lightness\jquery-ui-1.10.3.custom.css
DigiSig-master\css\ui-lightness\jquery-ui-1.10.3.custom.min.css
DigiSig-master\css\ui-lightness\images\animated-overlay.gif
DigiSig-master\css\ui-lightness\images\ui-bg_diagonals-thick_18_b81900_40x40.png
DigiSig-master\css\ui-lightness\images\ui-bg_diagonals-thick_20_666666_40x40.png
DigiSig-master\css\ui-lightness\images\ui-bg_flat_10_000000_40x100.png
DigiSig-master\css\ui-lightness\images\ui-bg_glass_100_f6f6f6_1x400.png
DigiSig-master\css\ui-lightness\images\ui-bg_glass_100_fdf5ce_1x400.png
DigiSig-master\css\ui-lightness\images\ui-bg_glass_65_ffffff_1x400.png
DigiSig-master\css\ui-lightness\images\ui-bg_gloss-wave_35_f6a828_500x100.png
DigiSig-master\css\ui-lightness\images\ui-bg_highlight-soft_100_eeeeee_1x100.png
DigiSig-master\css\ui-lightness\images\ui-bg_highlight-soft_75_ffe45c_1x100.png
DigiSig-master\css\ui-lightness\images\ui-icons_222222_256x240.png
DigiSig-master\css\ui-lightness\images\ui-icons_228ef1_256x240.png

DigiSig-master\css\ui-lightness\images\ui-icons_ef8c08_256x240.png
DigiSig-master\css\ui-lightness\images\ui-icons_ffd27a_256x240.png
DigiSig-master\css\ui-lightness\images\ui-icons_ffffff_256x240.png
DigiSig-master\images\default
DigiSig-master\images\digisig_structure.jpg
DigiSig-master\images\digsig.jpg
DigiSig-master\images\digsig_old.jpg
DigiSig-master\images\icons
DigiSig-master\images\logos
DigiSig-master\images\default\no_image.jpg
DigiSig-master\images\default\no_image_thumb.jpg
DigiSig-master\images\default\restricted.jpg
DigiSig-master\images\default\restricted_thumb.jpg
DigiSig-master\images\icons\digisigcast.png
DigiSig-master\images\icons\digisigdescription.png
DigiSig-master\images\icons\digisigimpression.png
DigiSig-master\images\icons\digisigitem.png
DigiSig-master\images\icons\digisigmatrix.png
DigiSig-master\images\icons\digisigseal.png
DigiSig-master\images\icons\info.png
DigiSig-master\images\logos\DS_Store
DigiSig-master\images\logos\cdhatslu.png
DigiSig-master\images\logos\digsig.jpg
DigiSig-master\include\analyticstracking.php
DigiSig-master\include\constants.php
DigiSig-master\include\footer.php
DigiSig-master\include\function.php
DigiSig-master\include\function_parsepath.php
DigiSig-master\include\imageGallery.php
DigiSig-master\include\lightbox
DigiSig-master\include\loadNextData.php
DigiSig-master\include\login.php
DigiSig-master\include\motif.php
DigiSig-master\include\lightbox\css
DigiSig-master\include\lightbox\images
DigiSig-master\include\lightbox\js
DigiSig-master\include\lightbox\css\lightbox.css
DigiSig-master\include\lightbox\images\close.png
DigiSig-master\include\lightbox\images\loading.gif
DigiSig-master\include\lightbox\images\next.png
DigiSig-master\include\lightbox\images\prev.png
DigiSig-master\include\lightbox\js\lightbox-plus-jquery.js
DigiSig-master\include\lightbox\js\lightbox-plus-jquery.min.js
DigiSig-master\include\lightbox\js\lightbox-plus-jquery.min.map
DigiSig-master\include\lightbox\js\lightbox.js
DigiSig-master\include\lightbox\js\lightbox.min.js

DigiSig-master\include\lightbox\js\lightbox.min.map
DigiSig-master\js\jquery-1.11.3.min.js
DigiSig-master\js\jquery-1.11.3.min.map
DigiSig-master\js\jquery-ui.min.js
DigiSig-master\js\pep.min.js
DigiSig-master\spidergl\box.f.glsl
DigiSig-master\spidergl\box.v.glsl
DigiSig-master\spidergl\hsh.f.glsl
DigiSig-master\spidergl\image.f.glsl
DigiSig-master\spidergl\lrgbptm.f.glsl
DigiSig-master\spidergl\multi.v.glsl
DigiSig-master\spidergl\multires.js
DigiSig-master\spidergl\rgbptm.f.glsl
DigiSig-master\spidergl\spidergl.js

Appendix

Digisig (v.1) website database tables

1. *access*
2. *classification_view*
3. *dataforgraph_view*
4. *entity*
5. *face_view*
6. *field*
7. *gallery_rti*
8. *gallery_view*
9. *representation_class_view*
10. *sealdescription_view*
11. *search_view*
12. *shelfmark_view*
13. *tb_index*
14. *user_digisig*

Where the table is quite small, the table is printed below. In other cases, the SQL query which generated the table is included, as it details the contents of the table and their source in the administrative database.

1. Access

pk_access	access_level
1	public
2	friends
3	private

2. Classification_view

```
SELECT class.class_number AS pk_class,  
       class.printphrase_class,  
       class.classnotation,  
       class.class_sortorder,  
       class.classdefinition,  
       class.level,  
       class.level1,  
       class.level2,  
       class.level3,  
       class.level4,  
       class.level5,  
       class.level6,  
       class.level7,
```

```

class.level8,
class.level9,
class.level10,
class.cases,
class.fk_face_example,
face.id_face,
seal.id_seal,
class.fk_representation_example,
representation.id_representation,
representation.fk_connection,
connection.medium,
representation.representation_filename,
connection.thumb,
representation.representation_thumbnail,
class.id_class
FROM class
LEFT JOIN face ON class.fk_face_example = face.pk_face
LEFT JOIN seal ON face.fk_seal = seal.pk_seal
LEFT JOIN representation ON class.fk_representation_example =
representation.pk_representation
LEFT JOIN connection ON representation.fk_connection = connection.pk_connection
WHERE class.classnotation IS NOT NULL
ORDER BY class.class_sortorder;

```

3. dataforgraph_view

```

SELECT shelfmark_view.fk_repository AS repository,
shelfmark_view.repository_fulltitle,
shelfmark_view.id_archoncode,
count(shelfmark_view.fk_repository) AS numofcases
FROM shelfmark_view
WHERE shelfmark_view.repository_fulltitle <> 'UNKNOWN'::text
GROUP BY shelfmark_view.fk_repository, shelfmark_view.repository_fulltitle,
shelfmark_view.id_archoncode
HAVING count(shelfmark_view.fk_repository) > 49;

```

4. entity

pk_entity	entity_view	entity_returnedvariables	entity_column n	entity_cod e
1				
2	shelfmark_view	shelfmark, fk_item, fk_event, number, pk_manifestation, file_photograph, fk_face, position_latin, fk_shape, shape, pk_seal, id, id_seal, nature	id_item	0

3	sealdescription_view	pk_sealdescription, sealdescription_identifier, fk_seal, fk_index, fk_sealcollection, sealdescription, motif_obverse, motif_reverse, legend_obverse, legend_reverse, sealsize_horizontal, sealsize_vertical, shape, catalogue_pagenummer, realizer, index, sealcollection_shorttitle	id_sealdescription	3
4	face_view	fk_seal, fk_faceterm, id, faceterm, face_horizontal, fk_shape, shape, fk_motifclass, class, face_vertical, fk_individual_realizer, fk_individual_corporategroup, biface_seal	id_seal	1
5				
6				
7				

5. face_view

```

SELECT face.pk_face,
       face.fk_seal,
       face.fk_faceterm,
       faceterm.faceterm,
       face.face_horizontal,
       face.fk_shape,
       shape.shape,
       face.fk_class AS fk_motifclass,
       class.class_name AS class,
       face.face_vertical,
       seal.fk_individual_realizer_b AS fk_individual_realizer,
       seal.fk_actor_group AS fk_individual_corporategroup,
       seal.biface_seal,
       face_horizontal_view.approximation_physical AS approx_horizontal,
       face_vertical_view.approximation_physical AS approx_vertical,
       seal.id_seal
FROM face,
     shape,
     faceterm,
     seal,
     class,
     face_horizontal_view,
     face_vertical_view
WHERE face.fk_faceterm = faceterm.pk_faceterm AND face.fk_shape = shape.pk_shape AND

```

face.fk_seal = seal.pk_seal AND face.fk_class = class.class_number AND face.pk_face = face_vertical_view.pk_face AND face.pk_face = face_horizontal_view.pk_face;

6. field

pk_field	field_title	field_order	field_column	field_returnedvariables	field_url
1	All Fields	1			all_fields
2	Shelfmarks	2	shelfmark	id_item, shelfmark, repository_fulltitle	shelfmarks
3	Motif Descriptions	4	motif_obverse	id_sealdescription, motif_obverse, a_index	descriptions
4	Names	5	realizer	id_sealdescription, realizer, a_index	names
5	Places	6	repository_location	id_sealdescription, repository_location, a_index	places
6	Catalogue Identifiers	3	sealdescription_identifier	id_sealdescription, sealdescription_identifier, a_index	catalogue
7	DigiSig Entity	7	id_seal	id_seal, id_seal	seal

7. gallery_rti

```
SELECT representation.fk_representation_type,
       image_state.image_state,
       representation.id_representation,
       representation.fk_digisig,
       seal.id_seal,
       item.id_item,
       repository.repository_fulltitle,
       part.reference_full,
       representation.representation_thumbnail,
       representation.representation_folder,
       connection.connection,
       connection.thumb,
       connection.medium,
       contributor.name_first,
       contributor.name_last,
       material.material,
       part.repository_location,
       part.startdate,
       part.enddate,
```

```

face.face_vertical,
face.face_horizontal,
representation.fk_access,
support.id_support
FROM representation
LEFT JOIN contributor ON representation.fk_contributor = contributor.pk_contributor
LEFT JOIN (manifestation
LEFT JOIN image_state ON manifestation.fk_image_state =
image_state.pk_image_state::numeric
LEFT JOIN support ON manifestation.fk_support = support.pk_support
LEFT JOIN item ON support.fk_item = item.pk_item
LEFT JOIN material ON support.fk_material = material.pk_material
LEFT JOIN part ON support.fk_part = part.pk_part
LEFT JOIN repository ON item.fk_repository = repository.pk_repository
LEFT JOIN face ON manifestation.fk_face = face.pk_face
LEFT JOIN seal ON face.fk_seal = seal.pk_seal) ON representation.fk_digisig =
manifestation.id_manifestation
LEFT JOIN connection ON representation.fk_connection = connection.pk_connection
WHERE representation.fk_access = 1 AND representation.fk_representation_type =
2::numeric;

```

8. gallery_view

```

SELECT representation.id_representation,
representation.fk_access,
representation.representation_filename,
representation.fk_connection,
representation.fk_digisig,
representation.representation_thumbnail,
representation.primacy_v1 AS primacy,
item.id_item,
item.shelfmark,
item.fk_repository,
repository.repository_fulltitle,
repository.id_archoncode,
support.fk_nature,
nature.nature_name AS nature,
class.class_name AS class,
class.classnotation,
class.class_number AS pk_class,
seal.id_seal,
connection.connection,
connection.thumb,
connection.medium
FROM class

```

```

RIGHT JOIN (nature
RIGHT JOIN (representation
JOIN manifestation ON representation.fk_digisig = manifestation.id_manifestation
LEFT JOIN support ON manifestation.fk_support = support.pk_support
LEFT JOIN item ON support.fk_item = item.pk_item
LEFT JOIN repository ON item.fk_repository = repository.pk_repository) ON
nature.pk_nature = support.fk_nature
LEFT JOIN face ON manifestation.fk_face = face.pk_face) ON class.class_number =
face.fk_class
LEFT JOIN seal ON face.fk_seal = seal.pk_seal
LEFT JOIN connection ON representation.fk_connection = connection.pk_connection
WHERE representation.fk_access = 1 AND class.classnotation IS NOT NULL AND
representation.primacy_v1 = 1::numeric;

```

9. representation_class_view

```

SELECT representation.fk_contributor_creator,
representation.fk_access,
connection.medium,
representation.representation_filename,
connection.thumb,
representation.representation_thumbnail,
representation.fk_digisig,
representation.primacy_v1 AS primacy,
seal.id_seal,
seal.fk_timegroupa,
seal.fk_timegroupb,
item.id_item,
repository.repository_fulltitle,
item.shelfmark,
face.fk_class,
class.class_name AS class,
class.level,
class.level1,
class.level2,
class.level3,
class.level4,
class.level5,
class.level6,
class.level7,
class.level8,
class.level9,
class.level10
FROM repository
RIGHT JOIN (item

```

```

RIGHT JOIN (manifestation
LEFT JOIN face ON manifestation.fk_face = face.id_face
LEFT JOIN class ON face.fk_class = class.class_number
LEFT JOIN seal ON face.fk_seal = seal.id_seal
LEFT JOIN support ON manifestation.fk_support = support.id_support) ON item.id_item =
support.fk_item
RIGHT JOIN representation ON manifestation.id_manifestation = representation.fk_digisig
LEFT JOIN connection ON representation.fk_connection = connection.pk_connection) ON
repository.pk_repository = item.fk_repository
WHERE representation.fk_access = 1 AND representation.primacy_v1 = 1::numeric AND
face.fk_class IS NOT NULL;

```

10. sealdescription_view

```

SELECT sealdescription.pk_sealdescription,
sealdescription.id_sealdescription,
sealdescription.fk_collection_old AS fk_collection,
sealdescription.sealdescription,
sealdescription.sealdescription_identifier,
sealdescription.sealdescription_title AS realizer,
sealdescription.biface_seal,
sealdescription.motif_obverse,
sealdescription.motif_reverse,
sealdescription.legend_obverse,
sealdescription.legend_reverse,
sealdescription.fk_approx_horizontal,
sealdescription.ui_catalogue,
connection.connection,
approximation.approximation_physical,
sealdescription.seal_size_horizontal,
sealdescription.fk_approx_vertical,
approximation_2.approximation2_physical,
sealdescription.seal_size_vertical,
sealdescription.shape,
sealdescription.catalogue_page_number,
sealdescription.catalogue_filename,
sealdescription.catalogue_ordering_number,
sealdescription.note,
sealdescription.fk_contributor,
collection.collection_shorttitle,
collection.collection_fulltitle,
collection.collection_volume,
collection.pk_collection,
collection.fk_catalogue,
catalogue.title,

```



```

catalogue.uri_catalogue,
catalogue.fk_access,
catalogue.publicationdate_start,
catalogue.publicationdate_end,
seal.pk_seal,
seal.id_seal,
representation.representation_filename,
contributor.name_first,
contributor.name_last,
contributor.name_middle,
tb_index.a_index
FROM approximation
  RIGHT JOIN (sealdescription
    LEFT JOIN approximation_2 ON sealdescription.fk_approx_vertical =
approximation_2.pk_approximation2) ON approximation.pk_approximation =
sealdescription.fk_approx_horizontal
  LEFT JOIN collection ON sealdescription.fk_collection_old = collection.pk_collection
  LEFT JOIN catalogue ON collection.fk_catalogue = catalogue.pk_catalogue
  LEFT JOIN tb_index ON catalogue.pk_catalogue = tb_index.fk_catalogue
  LEFT JOIN contributor ON sealdescription.fk_contributor = contributor.pk_contributor
  LEFT JOIN connection ON sealdescription.fk_connection = connection.pk_connection
  LEFT JOIN representation ON sealdescription.id_sealdescription = representation.fk_digisig
  LEFT JOIN seal ON sealdescription.fk_seal = seal.pk_seal
WHERE catalogue.fk_access = 1;

```

11. search_view

```

SELECT shelfmark_view.id_item,
  shelfmark_view.pk_item,
  shelfmark_view.shelfmark,
  shelfmark_view.fk_repository,
  shelfmark_view.repository_fulltitle,
  shelfmark_view.id_manifestation,
  shelfmark_view.repository_location,
  sealdescription_view.id_seal,
  sealdescription_view.pk_sealdescription,
  sealdescription_view.id_sealdescription,
  sealdescription_view.fk_catalogue,
  sealdescription_view.title,
  sealdescription_view.uri_catalogue,
  sealdescription_view.realizer,
  sealdescription_view.sealdescription,
  sealdescription_view.motif_obverse,
  sealdescription_view.motif_reverse,
  sealdescription_view.a_index,

```

```

sealdescription_view.fk_access,
sealdescription_view.sealdescription_identifier
FROM sealdescription_view
LEFT JOIN shelfmark_view ON sealdescription_view.pk_seal = shelfmark_view.pk_seal;

```

12. shelfmark_view

```

SELECT item.pk_item,
       item.shelfmark,
       item.id_item,
       item.fk_repository,
       repository.repository_fulltitle,
       repository.id_archoncode,
       series.fk_connection,
       part.pk_part AS pk_event,
       part.repository_startdate,
       part.repository_enddate,
       part.repository_location,
       part.repository_description,
       part.ui_part_repository AS ui_event_repository,
       connection.connection,
       connection.thumb,
       connection.medium,
       support.pk_support,
       support.fk_nature,
       nature.nature_name AS nature,
       manifestation.pk_manifestation,
       manifestation.fk_position,
       "position".position_latin,
       manifestation.id_manifestation,
       face.pk_face,
       seal.pk_seal,
       seal.id_seal,
       contributor.name_first,
       contributor.name_last,
       representation_view.fk_contributor_creator,
       representation_view.fk_access,
       representation_view.representation_filename,
       representation_view.representation_thumbnail,
       representation_view.primacy
FROM "position"
  RIGHT JOIN (manifestation
  LEFT JOIN (nature
  RIGHT JOIN support ON nature.pk_nature = support.fk_nature) ON
manifestation.fk_support = support.pk_support

```

LEFT JOIN part ON support.fk_part = part.pk_part
 LEFT JOIN item ON part.fk_item = item.pk_item) ON "position".pk_position =
 manifestation.fk_position
 LEFT JOIN repository ON item.fk_repository = repository.pk_repository
 LEFT JOIN series ON item.fk_series = series.pk_series
 LEFT JOIN connection ON series.fk_connection = connection.pk_connection::numeric
 LEFT JOIN representation_view ON manifestation.id_manifestation =
 representation_view.fk_digisig
 LEFT JOIN contributor ON representation_view.fk_contributor_creator =
 contributor.pk_contributor
 LEFT JOIN face ON manifestation.fk_face = face.pk_face
 LEFT JOIN seal ON face.fk_seal = seal.pk_seal;

13. tb_index

pk_index	a_index	index_order	fk_repository	index_url	fk_catalogue
1	All Indexes	1		all	
2	Seals in Medieval Wales and the Welsh Marches	6		simew	1
3	TNA, Catalogue of Seals (P.D.A. Harvey)	3		harvey	2
4	TNA, Catalogue of Seals (R. Ellis)	4		ellis	3
5	BL, Catalogue of Seals (W. de Gray Birch)	2		birch	4
6	British Library, London	8		3bl	
7	The National Archives, Kew, London	16		4tna	
8	National Library of Wales, Aberystwyth	17		18nlw	
9	Portable Antiquities Scheme	5		pas	7
10	London Metropolitan Archives, London	15		1lma	
11	East Sussex Record Office	11		12esro	
12	Saint Bartholomew's Hospital Archives, London	18		5sbh	
13	Cheshire Archives and Local Studies, Chester	10		20cals	

14	Herefordshire Archives Service, Hereford	14	21	has	
15	Shropshire Archives, Shrewsbury	19	22	sha	
16	Gwynedd Archives, Caernarfon Record Office	13	23	gacro	
17	Bangor University, Archives and Special Collections	7	24	buas	
18	Gwent Archives	12	25	ga	
19	Other Catalogues (various authors)	7		other	5
20	Durham Seals	9		durh	8
21	Catalogue of British Seal-Dies in the British Museum	20		ten	9

14. user_digisig

(A table for username and passwords – not included)