Digital epigraphy in 2022: state of the art

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Introduction

The field of digital epigraphy has seen significant development in recent years: not only are traditional epigraphic corpora increasingly being digitised and made accessible via their websites for anyone to browse and search but several resources are already born digital without any printed edition, e.g., *Inscriptions of Greek Cyrenaica* (Roueche *et al.*, 2020), *Inscriptions of Roman Tripolitania* (Roueche, 2022); for more see (Elliott, 2015). Most inscriptions contain references to places, people or events, or contain spatio-temporal data related to the place and time of their creation and provide an ideal resource to study past communities as a whole. However, in order to be able to harness their full potential and for example access *all* inscriptions from a place of interest or of a given type, we need to link the existing datasets together. The concept of *Linked Open Data* (LOD) provides a means of connecting various digital datasets while enriching the text with broader spatio-temporal context as well as prosopographic data, leading to the creation of new connections between individual inscriptions as well as archaeological sites or potential re-evaluation of historical narratives (Bagnall *et al.*, 2006; Geser, 2016; Tupman, 2021). Although many epigraphic datasets have been using LOD, especially to record the spatial component by using Pleiades or Trismegistos, there is still a considerable gap in the LOD implementation across the discipline and thus the accessibility of the data.

The contribution of individual projects can be beneficial to groups sharing similar interests (i.e., geographic area, chronological period, linguistic environment) but is rather limited to the epigraphic discipline as a whole. The value of LOD lies in being able to build on the efforts and investment of numerous generations of epigraphers who relentlessly produced high-quality publications in an analogue and nowadays, in a digital form. Whether there is one master database connecting all the inscriptions to one, or not, once the data is FAIR and linked to other LOD, new avenues of research open - either to large scale comparative studies such as (Assael *et al.*, 2022; Heřmánková *et al.*, 2021) or projects working on the same material but with different emphases (Mullen & Bowman, 2021; Willi, 2021). Once the data are linked, there is no need to build one central repository, which is often costly and non-sustainable in the long run as documented by the recent experience of the EAGLE Portal (Orlandi, 2021), but rather to empower individual users and provide them with clear guidelines and skills on how to work with LOD in epigraphy.

The **FAIR Epigraphy Project** (https://www.csad.ox.ac.uk/fair-epigraphy) aims to fill in the gap between the digitisation of inscriptions and being able to use their full potential as a digital resource. The FAIR Epigraphy project has been established as a collaboration between Johannes Gutenberg University in Mainz (Prof. Marietta Horster) and the University of Oxford (Prof. Jonathan Prag), funded by the Arts and Humanities Research Council (AHRC) and Deutsche Forschungemeinschaft (DFG) and will run for 36 months from 2022 to 2025. **FAIR Epigraphy** aims to create an interactive platform for all epigraphic projects, aligning their digital needs with the principles of FAIR science. The overall desirability for **FAIR** - *Findable*, *Accessible*, *Interoperable*, *Reusable* (Wilkinson *et al.*, 2016) data is fundamental advancing research into the epigraphic, linguistic, and material culture of the ancient world.

> *"The principles emphasise machine-actionability (i.e., the capacity of computational systems to find, access, interoperate, and reuse data with none or minimal human intervention) because humans increasingly rely on computational support to deal with data as a result of the increase in volume, complexity, and creation speed of data."* (FAIR Principles website, https://www.go-fair.org/fair-principles/)

With the increase in Linked Open Data and novel interface technologies and standards, the FAIR Epigraphy project will be able to create the tools and the community needed to transform epigraphic research in the digital age. However, the FAIR Epigraphy project does not wish to replicate any current efforts, but rather to align existing initiatives and bring them together to create a hub of high-quality tools and FAIR compliant standards and resources for the modern epigraphic discipline. Our internationally collaborative approach will enable and support innovative research across epigraphic data, and the wider linked web of data (especially archaeological data), such that all epigraphic data is increasingly FAIR for both the research community and the wider public. To that end, we aim to:

1. consolidate community-wide standards (vocabularies and ontology);
2. host and make fully accessible the resulting linked open data published by individual projects (RDF/XML data publication);
3. develop the tools for community implementation of those standards (vocabulary and ontology hosting and publication);
4. provide support to members of the community in implementing the standards within existing and new projects.

In order to map the existing field of digital epigraphy, current practices and standards, as well as clarify the (digital) needs of the discipline, we have circulated the two scoping surveys in February 2022 (*FAIR Epigraphy: Scoping survey for partners and collaborators* and *Digital epigraphy in 2022: scoping survey* for all digital epigraphy projects). The results of the surveys, presented in the current report, will be used to plan the activities and efficiently allocate the resources of the FAIR Epigraphy Project in the next three years. The survey answers are anonymised so that individual projects cannot be identified on the basis of their replies and the data is stored as a TSV (tab-separated value) file within the project's GitHub repository (https://github.com/FAIR-epigraphy/scoping_survey_report/) as a supplement to the text of this report and can be accessed under the CC-BY-SA 4.0 International License.

FAIR Epigraphy partner projects

This section summarises the results of the online survey *FAIR Epigraphy: Scoping survey for partners and collaborators* aimed at the established digital projects that are already official partners and collaborators of the FAIR Epigraphy Project. We sent the survey to 16 partner projects. We received 13 responses to the survey, with a response rate of 75% with some participants responding on behalf of two projects combined into one response (and thus skewing the response rate). 92% of partner projects gave consent to publish their anonymised responses as part of this report. Those who participated in the survey but did not give their consent are excluded from the report.

The partner projects represent relatively established projects with the average duration of a project being 6 years. The shortest participating project reported their duration as 3 years and the longest 207 as years.

Language coverage

Question: *What is the predominant language of epigraphic data in your project (for mixed collections or collections where other languages are predominant provide details in Other)*

```
##                                                    language n ratio
## 1                                                     Latin 8    28
## 2                                                     Greek 7    24
## 3                                                    Hebrew 2     7
## 4                                                     Other 2     7
## 5                                             Ancient Celtic 1     3
## 6                                                   Elymian 1     3
## 7                                                  Etruscan 1     3
## 8                                                   Gaulish 1     3
## 9                                                     Oscan 1     3
## 10 other epichoric languages from the west provinces (ex. Africa) 1     3
## 11                                           Phoenician-Punic 1     3
## 12                                                    Punic 1     3
## 13                                                   Raetic 1     3
## 14                                                    Sikel 1     3
```

Commentary: The language coverage of the participating projects consists predominantly of Latin and Greek either on its own or in combination (representing 52% of the answers). The languages listed as `Other` consisted of *Other, Ancient Celtic, Elymian, Etruscan, Gaulish, Oscan, other epichoric languages from the west provinces (ex. Africa)*. 7 participating projects record inscriptions in one language only, while 5 contain inscriptions in two and more languages (7 being the maximum number of listed languages.) The `Other` (i.e. other than Greek and Latin) category encompassed a substantial part of the surveyed projects, documenting the need to expand beyond the traditional Latin and Greek focus of the classical epigraphic discipline. It is, however, worth noting the majority of participating projects the records languages from the wider Mediterranean/European linguistic space.

Combinations of languages as retrieved from the survey:

```
##  [1] "Greek; Latin"
##  [2] "Latin"
##  [3] "Gaulish"
##  [4] "Latin; Greek; Punic; Etruscan; Hebrew; Raetic; Other"
##  [5] "Latin; Greek; other epichoric languages from the west provinces (ex. Africa)"
##  [6] "Greek"
##  [7] "Ancient Celtic"
##  [8] "Latin"
##  [9] "Latin; Greek; Other"
## [10] "Greek; Latin; Phoenician-Punic; Oscan; Sikel; Elymian; Hebrew"
## [11] "Latin"
## [12] "Greek"
```

IT infrastructure

Question: *Does the project have a website?*

```
## # A tibble: 1 x 2
##   Website     n
##   <chr>   <int>
## 1 Yes        12
```

Commentary: All of the participating projects currently maintain an online presence (as of February 2022).

Question: *Does your project have an IT specialist(s)?*

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 5 x 3
##   IT_spec                                                    n ratio
##   <chr>                                                  <int> <dbl>
## 1 Yes, equivalent of part-time (<1.0 FTE) position           7    58
## 2 No                                                         2    17
## 3 We paid some specialists, but currently we have no budget for the~  1     8
## 4 Yes, equivalent of full-time (1.0 FTE) position            1     8
## 5 Yes, equivalent of more than full-time (>1.0 FTE) position  1     8
```

Commentary: Majority of these established digital projects have an IT specialist, yet only 2 projects have an equivalent of 1.0 FTE or more at their disposal. 58 % of projects have access to part-time IT support for their projects, which in some instances may be only a few hours per week per project. 3 projects reported no availability of IT support, even on a part-time basis (representing 25% of participating partner projects).

Question: *Does your project store epigraphic data in the following formats. . . ?*

```
## # A tibble: 9 x 3
##   format                                      n no_format
##   <chr>                                   <int>     <dbl>
## 1 Epidoc XML                                  4         1
## 2 Epidoc XML, CSV, SQL or similar             1         3
## 3 Epidoc XML, in print                        1         2
## 4 Epidoc XML, JSON, CSV                        1         3
## 5 Epidoc XML, JSON, RDF                        1         3
## 6 Epidoc XML, SQL or similar                  1         2
## 7 RDF, SQL or similar                         1         2
## 8 SQL or similar                              1         1
## 9 We aim to switch to Epidoc XML storable data 1        1
```

Commentary: The majority of projects use `Epidoc XML` as their main output data format (83% of participating projects), either in combination with other formats or as a sole data format. Other data formats are represented less frequently: JSON (17%), RDF (17%), SQL(33%) and CSV (17%). 25% of projects use only one type of data format, while 50% use two or more data format types.

Data sharing

Question: Do you share your data outside of your project?

```
## # A tibble: 6 x 3
##   share                                                     n ratio
##   <chr>                                                 <int> <dbl>
## 1 Yes, under a Creative Commons license                     7    58
## 2 Not currently, but we are thinking about it               1     8
## 3 Yes, on demand                                            1     8
## 4 Yes, without any license                                  1     8
## 5 Yes, without any license, We aim to switch to CC-BY 4.0   1     8
## 6 Yes, without any licenses, The question of licences is under cons~ 1  8
```

Commentary: All partner projects reported their willingness to share the data, even if they are not currently doing it, or if they provide the data only on demand. 58% of partner projects share the data under a Creative Commons license (https://creativecommons.org/), which is the preferred mode according to the FAIR data principles. Large part of partners that are currently not using Creative Commons licenses are considering their use in the future.

Question: *How do share your data with users outside your project?*

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 12 x 3
##    share_all                                                n share_method
##    <chr>                                                <int>        <dbl>
##  1 Individual Epidoc XMLs or Epidoc XML dumps on the website   1            1
##  2 Individual Epidoc XMLs or Epidoc XML dumps on the website~  1            2
##  3 Other publicly accessible repository (specify in Other); ~  1            2
##  4 Public repository on GitHub                                 1            1
##  5 Public repository on GitHub; Individual Epidoc XMLs or Ep~  1            3
##  6 Public repository on GitHub; Zenodo; Individual JSONs or ~  1            7
##  7 Public repository on GitHub; Zenodo; Other publicly acces~  1            8
##  8 Via search output on our website; Other output forms are ~  1            2
##  9 Via search output on our website; We aim to switch to mor~  1            2
## 10 Via search output on our website; We sent an email with r~  1            2
## 11 Zenodo; Individual CSVs or CSV dumps on the website         1            2
## 12 Zenodo; Individual JSONs or JSON dump on the website; Ind~  1            4
```

Commentary: All partner projects provide at least one way of sharing the data (whether it may be currently accessible to the public or not, or it is intended to be accessible in the future). The average (median) number of sharing methods per project is 2.
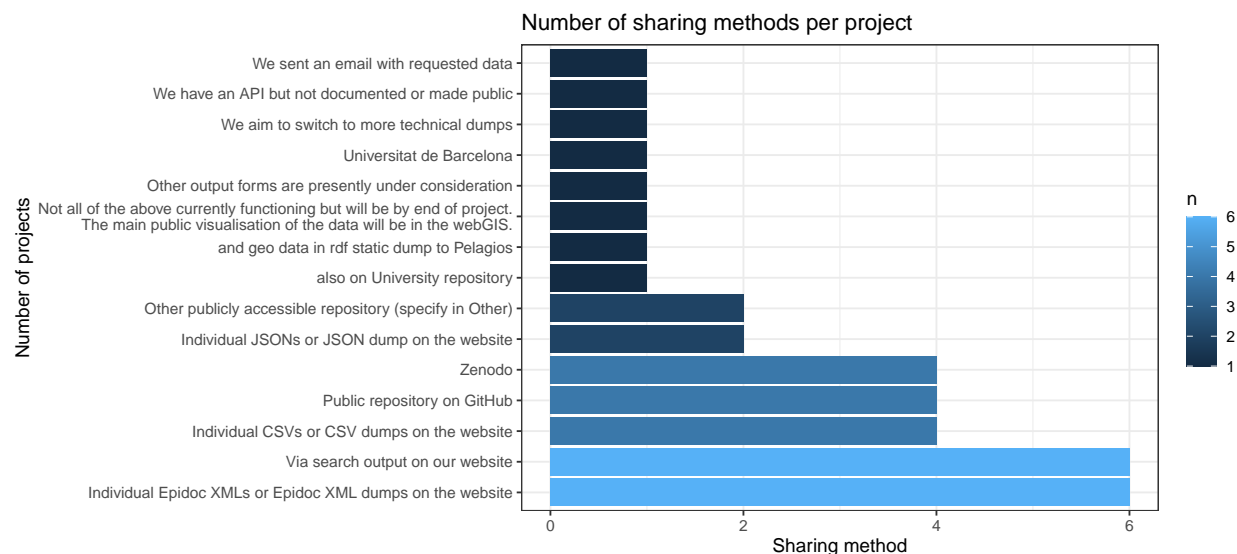
Figure 1: Figure showing the popularity of individual sharing methods and formats across partner projects.

Commentary: Epidoc XML is by far the most popular format for data sharing (implemented by 6 projects), however other Open Science services are starting to make their way into established digital epigraphy projects, such as sharing via a public repository, implemented by 4 (GitHub) and 4 (Zenodo) projects respectively, as well as providing raw data in the CSV (comma-separated value) format (4 projects), or as JSON (JavaScript Object Notation) files (4 projects). Only a relative minority of participating partner projects shares the data on an on-demand basis or have a non-public API access point to their data.

Institutional policies

Question: *Does your institution or funding body require your project to comply with any data policies (e.g., FAIR principles, data storage, data sharing, Open Science)?*

```
## # A tibble: 4 x 3
```

```
##    policies                                                        n ratio
##    <chr>                                                        <int> <dbl>
## 1 Yes                                                              7    58
## 2 No                                                               3    25
## 3 Not yet                                                          1     8
## 4 The ERC open data policies don't apply to this project, but we ar~ 1   8
```

Commentary: The majority of projects (represented by 58%) are required to comply with data-related policy introduced either by their institution or a funding body. A smaller part of partner projects (33%) is not required to follow any data policy, but some follow it on a voluntary basis.

Question: *If you have answered YES in the previous question, please specify what are the policies, or provide a link.*

```
## [1] "The funding body (the ERC) expects that research results are available in open access"
## [2] "Open access publication."
## [3] "Actualització de la Política d'Accés Obert a la Universitat de Barcelona (http://hdl.handle.net/
## [4] "Data Sharing, Open Science"
## [5] "usual ERC requirements"
## [6] "Currently subject to ERC open data policies (https://ec.europa.eu/research/participants/docs/h20
## [7] "https://forschungsdatenmanagement.bbaw.de/de"
```

Commentary: Several of the partner projects follow the ERC data and open access policies. More information on ERC Open Research Data and Data Management Plans can be found at https://erc.europa.eu/sites/default/files/document/file/ERC_info_document-Open_Research_Data_ and_Data_Management_Plans.pdf or at ERC Open Science policies page https://erc.europa.eu/managing-your-project/open-science.

Open Science practice

Question: *Standardized terminologies: The project uses the following systems:*

To see more data, click on the arrow in the top right hand corner of the table below.

```
##
## 1
## 2
## 3
## 4 "Pre-defined lists are a problem in itself as it is difficult to categorize in advance everything
## 5
## 6
##   n ratio
## 1 7    58
## 2 7    58
## 3 5    42
## 4 1     8
## 5 1     8
## 6 1     8
```

Commentary: The lists of vocabularies for the epigraphic discipline created by the EAGLE project (https://www.eagle-network.eu/resources/vocabularies/) are used by most of the projects: either in the original form (50% of participating projects) or in the form modified for the needs of the project (66% of participating projects). The need for modifications suggests that the EAGLE vocabularies do not in fact form a community-wide standard and need to be improved before becoming one. The process has been already started by the Epigraphy.info Vocabularies working group of which Hermankova, Horster, and Prag are all members. For more details see https://epigraphy.info/vocabularies_wg/. If you would like to join the working group, please get in touch with the authors.

Question: *Standardized terminologies: data on combination of vocabularies systems*

```
## # A tibble: 4 x 3
##   standard_method_no     n ratio
##              <dbl> <int> <dbl>
## 1                 1     6    50
## 2                 2     3    25
## 3                 3     2    17
## 4                 4     1     8
```

Commentary: The majority of projects (50%) uses only one method to record their standard terminologies, while 50% of projects use a combination of two or three methods. Internal authority lists are used in combination with the EAGLE vocabularies both in their original and modified form. Sharing or publication of internal authority lists would therefore be highly beneficial for improving the existing EAGLE vocabularies.

Question: *Linked Open Datasets: The project uses the following systems:*

```
##                                                              linked_data
## 1                                                            Trismegistos
## 2                                                                Pleiades
## 3                                                      EAGLE vocabularies
## 4                                                                     PIR
## 5                                                              EDH People
## 6                                                                    LGPN
## 7                                                               Adriatlas
## 8                                                               Cartapulia
## 9                                                      http://kerameikos.org/
## 10                       More under consideration. Trismegistos is not free!
## 11                                                      OxREP mines database
## 12                                                                 Period.O
## 13 We provide TM references in our bibliography but inconsistently and without cross linking
## 14                    We were working on a cooperation with TM when our funding finished
##     n ratio ratio_all_proj
## 1  10    24             83
## 2   9    22             75
## 3   7    17             58
## 4   3     7             25
## 5   2     5             17
## 6   2     5             17
```

```
## 7   1    2          8
## 8   1    2          8
## 9   1    2          8
## 10  1    2          8
## 11  1    2          8
## 12  1    2          8
## 13  1    2          8
## 14  1    2          8
```

Commentary: From the listed Linked Open Datasets (LOD), Pleaides and Trismegistos are by far the most popular, being used in 75% and 83% of all participating projects. The EAGLE vocabularies are used in 58% of all participating projects. Prosopographic data, represented by EDH People, PIR, and LGPN are used by 59% of all participating projects. The survey responses suggest there is a great space for improvement and potentially great benefit in creating and further improving prosopographic LOD.

Non-partnered epigraphy projects

This section summarises the results of the online survey *Digital epigraphy in 2022: scoping survey* for all digital epigraphy projects) aimed at digital projects currently listed under Digital Epigraphy Projects on the Digital Classicist Wiki page (https://wiki.digitalclassicist.org/Category:Projects) that were possible to trace in February 2022. The survey was sent to 83 projects and the link circulated until mid-April 2022. We have received 27 responses to the survey, a response rate of 31%. Some participants contributed on behalf of multiple projects in one response, which we were unable to disentangle and thus the response rate is slightly skewed. 96% of non-partnered projects gave consent to publish their anonymised responses as part of the current report. The remaining responses are excluded from the report but will be used to inform the FAIR Epigraphy planning and decision making.

The respondents represent a wide range of projects from well established projects to short-term mostly PhD projects, with the average duration of a project being 5.5 years. The shortest participating project reported their duration as 1 year and the longest 117 years (that was clearly not digital for the whole of that time).

Question: *Is the project still active?*

```
## # A tibble: 3 x 3
##   status                                         n ratio
##   <chr>                                      <int> <dbl>
## 1 Yes                                           19    73
## 2 Currently not, but we are considering a re-start   4    15
## 3 No, the project is closed                       3    12
```

Commentary: 73% of responding projects are still active, while 12% of projects are permanently closed and do not consider restarting in the future. 15% of projects are currently not active, but might be reactivated in the future.

Language coverage

Question: *What is the predominant language of epigraphic data in your project (for mixed collections or collections where other languages are predominant provide details in Other)*

```
##                       language  n ratio
## 1                         Greek 16    38
## 2                         Latin 11    26
```

```
## 3                                  Phoenician  2    5
## 4                                    Akkadian  1    2
## 5   Ancient Languages of the Mediterranean area  1    2
## 6                                      Arabic  1    2
## 7                                     Aramaic  1    2
## 8                                 Hattian u.a.  1    2
## 9                                     Hittite  1    2
## 10                                    Hurrian  1    2
## 11                                     Luwian  1    2
## 12                                   Neopunic  1    2
## 13                                      Other  1    2
## 14                             Palaeo-European  1    2
## 15                             Palaeo-Hispanic  1    2
## 16                                      Punic  1    2
```

Commentary: The language coverage of the participating projects consisted predominantly of Latin and Greek projects representing 64% of projects combined. Greek being the most frequent language, either as a sole/predominant language (11 projects) or in combination with other languages (5 projects). Latin being a sole/predominant language in 6 projects or in combination with other languages (5 projects). 18 participating projects record inscriptions in one language only, while 8 contain inscriptions in two and more languages (5 being the maximum number of listed languages.).

The languages listed as `Other` consisted of languages such as Phoenician, Akkadian, Ancient Languages of the Mediterranean area, Arabic, Aramaic, Hattian u.a., Hittite, Hurrian, Luwian, Neopunic, Other, Palaeo-European, Palaeo-Hispanic, Punic. All languages come from the wider Mediterranean/European linguistic space.

Combinations of languages as retrieved from the survey:

```
##  [1] "Latin"
##  [2] "Greek"
##  [3] "Greek; Latin; Other"
##  [4] "Latin; Greek"
##  [5] "Hittite; Akkadian; Hurrian; Luwian; Hattian u.a."
##  [6] "Greek; Latin; Aramaic; Phoenician; Arabic"
##  [7] "Greek; Latin"
##  [8] "Phoenician; Punic; Neopunic"
##  [9] "Palaeo-European; Palaeo-Hispanic"
## [10] "Ancient Languages of the Mediterranean area"
```

IT infrastructure

Question: *Does the project have a website?*

```
## # A tibble: 2 x 2
##   Website      n
##   <chr>    <int>
## 1 Yes         25
## 2 No           1
```

Commentary: The vast majority of the participating projects maintains an online presence (as of February 2022).

Question: *Does your project have an IT specialist(s)?*

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 9 x 3
##   IT_spec                                                      n ratio
##   <chr>                                                    <int> <dbl>
## 1 N/A                                                          7    27
## 2 No                                                           6    23
## 3 Yes, equivalent of part-time (<1.0 FTE) position             6    23
## 4 Yes, equivalent of full-time (1.0 FTE) position              2     8
## 5 depending on development steps; expertise and experience transfer~   1     4
## 6 We are in cooperation with an IT specialist (equivalent of full-t~   1     4
## 7 We do not have an IT specialist permanently assigned to the proje~   1     4
## 8 We had                                                       1     4
## 9 We have the support of two IT specialists for maintenance and sma~   1     4
```

Commentary: Only 8% of projects have an equivalent of 1.0 FTE or more at their disposal. 35% of digital projects have an IT specialist available for at least several hours per week or share them with other digital projects within their institution. Several projects report difficulty with finding financial resources to support further development and long-term sustainability of the project or even day-to-day support. 27% of the participating projects report that they currently do not have any access to IT support. An additional 27% of projects did not indicate whether they have access to IT support because they are no longer active. In order to understand the precise significance of this data, it would be necessary in future surveys to clarify the current funding status of individual projects.

Question: *Does your project store epigraphic data in the following formats. . . ?*

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 11 x 3
##    format                                                   n no_format
##    <chr>                                                <int>     <dbl>
##  1 Epidoc XML                                               6         1
##  2 SQL or similar                                           4         1
##  3 CSV, SQL or similar                                      1         2
##  4 Epidoc XML, CSV                                          1         2
##  5 Epidoc XML, JSON, RDF, CSV                               1         4
##  6 Epidoc XML, SQL or similar                               1         2
##  7 JSON, SQL or similar, the xml version of the data is availab~   1     3
##  8 None - we use analog systems (printed), 3d viewers      1         2
##  9 RDF                                                      1         1
## 10 SQL or similar, We are working on providing also an Epidoc X~   1     2
## 11 XML adapted from Epidoc XML                             1         1
```

Commentary: The majority of projects use `Epidoc XML` as their main output data format (42% of participating projects), either in combination with other formats or as a sole data format. SQL and similar database formats are relatively common in 31% of projects. Other data formats are represented less frequently by a small number of projects and mostly as complementary data formats to more popular formats such as Epidoc XML or SQL: JSON (8%), RDF (8%), and CSV (12%). 4% of projects indicated the use of combination of analogue data and 3D data format. 4% of projects indicated using their own version of Epidoc XML, adapted to their specific needs.

15% of projects use only one type of data format, while 27% use two or more data format types (such as Epidoc XML, SQL or similar, CSV, JSON, RDF, the xml version of the data is available through the EAGLE project, None - we use analog systems (printed), 3d viewers, We are working on providing also an Epidoc XML version of at least the annotated texts (https://epidoc.stoa.org/gl/latest/app-epi-mycenaean.html)), XML adapted from Epidoc XML).

The frequent use of SQL format signalize a relatively low compliance with the FAIR data principles, with individual databases being recorded in non-standard format with a specific purpose in mind, which are not immediately interoperable with e.g. Epidoc XML based projects. 4 projects use SQL as their sole data storage format, and depending on the structure of a given database, there might be a higher risk of not being easily *Findable*, *Accessible*, and *Interoperable* with the rest of the existing epigraphic datasets.

The data format of the projects that are no longer active is recorded in the following *Data sharing* section, under *Closed Projects.*

Data sharing

Active projects

This section summarized only the 'active' projects. For 'closed/non-active' projects, see the section below.

Question: *Do you share your data outside of your project?*

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 10 x 3
##    share                                                 n ratio
##    <chr>                                             <int> <dbl>
##  1 Yes, under a Creative Commons license                 8    42
##  2 Not currently, but we are thinking about it           3    16
##  3 so far without explicit license                       1     5
##  4 Under demand                                          1     5
##  5 we periodically share our data with the Europeana platform   1     5
##  6 Yes, publishing contributions with link to the Catalogue of the ~   1     5
##  7 Yes, under a Creative Commons license, and also French Etalab Li~   1     5
##  8 Yes, under a Creative Commons license, by login through guest pa~   1     5
##  9 Yes, under a Creative Commons license, We are linked with other ~   1     5
## 10 Yes, without any license                              1     5
```

Commentary: As of February 2022, 19 projects participated in the survey as active projects. The majority of active projects are willing to share their data, representing 82% of participating projects. 57% of active projects share the data under a Creative Commons license, which is the preferred mode according to the FAIR data principles. 10% of active projects share the data without any specific license, while 5% provide the data only on demand.

Question: *How do share your data with users outside your project?*

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 17 x 3
##    share_all                                           n share_method
##    <chr>                                           <int>      <dbl>
```

```
## 1  "Individual Epidoc XMLs or Epidoc XML dumps on the websit~       2           1
## 2  "Via search output on our website"                              2           1
## 3  "depending of the request"                                      1           1
## 4  "Individual CSVs or CSV dumps on the website"                   1           1
## 5  "Individual Epidoc XMLs or Epidoc XML dumps on the forthc~      1           1
## 6  "Individual Epidoc XMLs or Epidoc XML dumps on the websit~      1           2
## 7  "on request"                                                    1           1
## 8  "Other publicly accessible repository (specify in Other),~      1           2
## 9  "Other publicly accessible repository (specify in Other),~      1           6
## 10 "Other publicly accessible repository (specify in Other),~      1           2
## 11 "Public repository on GitHub, Individual Epidoc XMLs or E~      1           2
## 12 "Sketchfab website"                                             1           1
## 13 "Via search output on our website, We sent an email with ~     1           4
## 14 "We don't currently share data outside our project"            1           1
## 15 "We sent an email with requested data, We ar planning to ~     1           3
## 16 "Zenodo, Other publicly accessible repository (specify in~     1           3
## 17 "Zenodo, the xml version of the data is available through~     1           2
```

Commentary: As of February 2022, all active projects provide at least one way of sharing the data (whether it is currently accessible to the public or not, or it is intended to be accessible in the future). The average (median) number of sharing methods per project is 2, while the maximum number is 6 (e.g.,Other publicly accessible repository (specify in Other), Individual JSONs or JSON dump on the website, Individual Epidoc XMLs or Epidoc XML dumps on the website, Public API on our website, French Huma-Num platform and services, particularly Nakala services for our photographs).

There is no discipline-wide standard for data repository as all projects use either their institutional or national resources that may or may not be ideal for epigraphic data. From those who share the data, the Epidoc XML format is the most popular format for data sharing, as well as search output on the project's website. Open Science practices do not seem to be a popular choice in digital epigraphy, such as sharing via public repository (e.g., GitHub or Zenodo), as well as providing raw data in the CSV (comma-separated value) format, or as JSON (JavaScript Object Notation) files. Computer-automated access to data is rare and manual human interaction, such as manual selection and/or manual download of files prevails, potentially hindering any quantitative and reproducible studies, or linking of datasets via automated processes. For example, an API access point is currently available only for a very limited number of projects.

Closed projects

This section summarized only the 'closed/non-active' projects. For 'active' projects, see the section above.

Question: *Is the data created by your project accessible?*

```
## # A tibble: 3 x 3
##   share                                                  n ratio
##   <chr>                                              <int> <dbl>
## 1 Yes, under a Creative Commons license                  5    71
## 2 Not currently, but we are thinking about making it available    1    14
## 3 Yes, without any license                               1    14
```

Commentary: As of February 2022, 7 of the participating projects are closed. 71% of them provides access to their data under a Creative Commons license even though the project is no longer active, 14% of closed projects provide access without any license and 14% do not currently provide access to the data they have created during the duration of their project, but they are considering to make the data available.

Question: *Is the data created by your project accessible?*

```
## # A tibble: 8 x 3
##   service                                                     n ratio
##   <chr>                                                   <int> <dbl>
## 1 Individual Epidoc XMLs or Epidoc XML dumps on the website    4    57
## 2 Public repository on GitHub                                  3    43
## 3 Other publicly accessible repository (specify in Other)      2    29
## 4 https://dspace-clarin-it.ilc.cnr.it/repository/xmlui/handle/20.50~  1    14
## 5 https://open.library.ubc.ca/collections/squeezes            1    14
## 6 ILC4CLARIN Repository                                        1    14
## 7 Via search output on our website                            1    14
## 8 We don't currently share data outside our project           1    14
```

Commentary: As of February 2022, 7 of the participating projects are closed. Out of these closed projects, 57% provide their data in the Epidoc XML format on their website, 43% provide their data via public repository on GitHub, 29% via other publicly accessible repositories, such as ILC4CLARIN Repository. 14% of closed projects don't currently share data outside the project (=1 project).

The fact that even the closed projects share their data in some form even after their project is no longer active/does not have funding for further development or maintenance is positive. However, most of the data sit on private or institutional websites that can easily disappear, along with access to the data. The best practice for the longevity of the created datasets would be archiving them to a publicly accessible repository, either GitHub, Zenodo, HAL, Open Science Framework or any similar archival infrastructure.

Institutional policies

Question: Does your institution or funding body require your project to comply with any data policies (e.g., FAIR principles, data storage, data sharing, Open Science)?

To see more data, click on the arrow in the top right hand corner of the table below.

```
## # A tibble: 7 x 3
##   policies                                                    n ratio
##   <chr>                                                   <int> <dbl>
## 1 No                                                         11    58
## 2 Yes                                                         3    16
## 3 Neither our grant funding (NEH), private funding, nor institution~  1     5
## 4 Not with an official request, at the moment                 1     5
## 5 Policies are on the way, but not yet established.           1     5
## 6 The French National Centre for Scientific Research strongly encou~  1     5
## 7 We don't work for any institution                           1     5
```

Commentary: 58% of projects do not explicitly have to follow any policy. 16% of projects are required to comply with data related policies, while an additional 20% of projects are encouraged to comply with FAIR data principles but no rules are enforced.

Question: *If you have answered YES in the previous question, please specify what are the policies, or provide a link.*

```
## [1] "https://www.uio.no/english/for-employees/support/research/research-data-management/fair-data/"
## [2] "All : French \"Plan national pour la science ouverte:Open Science\", https://www.ouvrirlascienc
## [3] "Creative Commons"
## [4] "data sharing"
```

Commentary: Digital policies in the field of digital epigraphy are still being implemented, which does not reflect yet on past and current projects. There is a variation between national policies amongst our responses, with France providing a vocal example in the implementation of Open Science in digital epigraphy.

When we compare the average duration of the project and the requirement to follow any institutional policies regarding the FAIR data, we see that established projects are more likely required to follow such policies than short and mid-term projects.

```
## # A tibble: 4 x 2
##   policy_simple average_duration_yr
##   <chr>                       <dbl>
## 1 N/A                          4.29
## 2 No                          10.1
## 3 Voluntary                    4
## 4 Yes                         35.8
```

Additional investigation:

The main factor influencing the need to comply with institutional principles seems to be however also the age of the project - for projects created in recent years (e.g., since 2015), we would expect FAIR data policy being one of conditions for securing funding. In order to verify this hypothesis, we collected the additional information manually from projects websites and published materials, such as the official project start-date, the country of origin of a given project, indication of existing funding and primary focus of a given project (text publication or metadata collection); the anonymised data are saved as a TSV in the same GitHub repository as `/data/02_scoping_survey_anonymised_PostSurvey.tsv`. Our expectations on data policies being progressively implemented over the last seven years were confirmed only partially. As the chart below demonstrates, the number of projects that indicated existing institutional data policy grows steadily since 2015 (year is indicated by brown dashed vertical line). On contrary, the number of projects that indicated no existing data policy decreases, but only relatively slowly. The projects responded `N/A` are those who consider themselves in February 2022 as `closed`.

Requirement of institutional data policy for non–partnered projects sinc
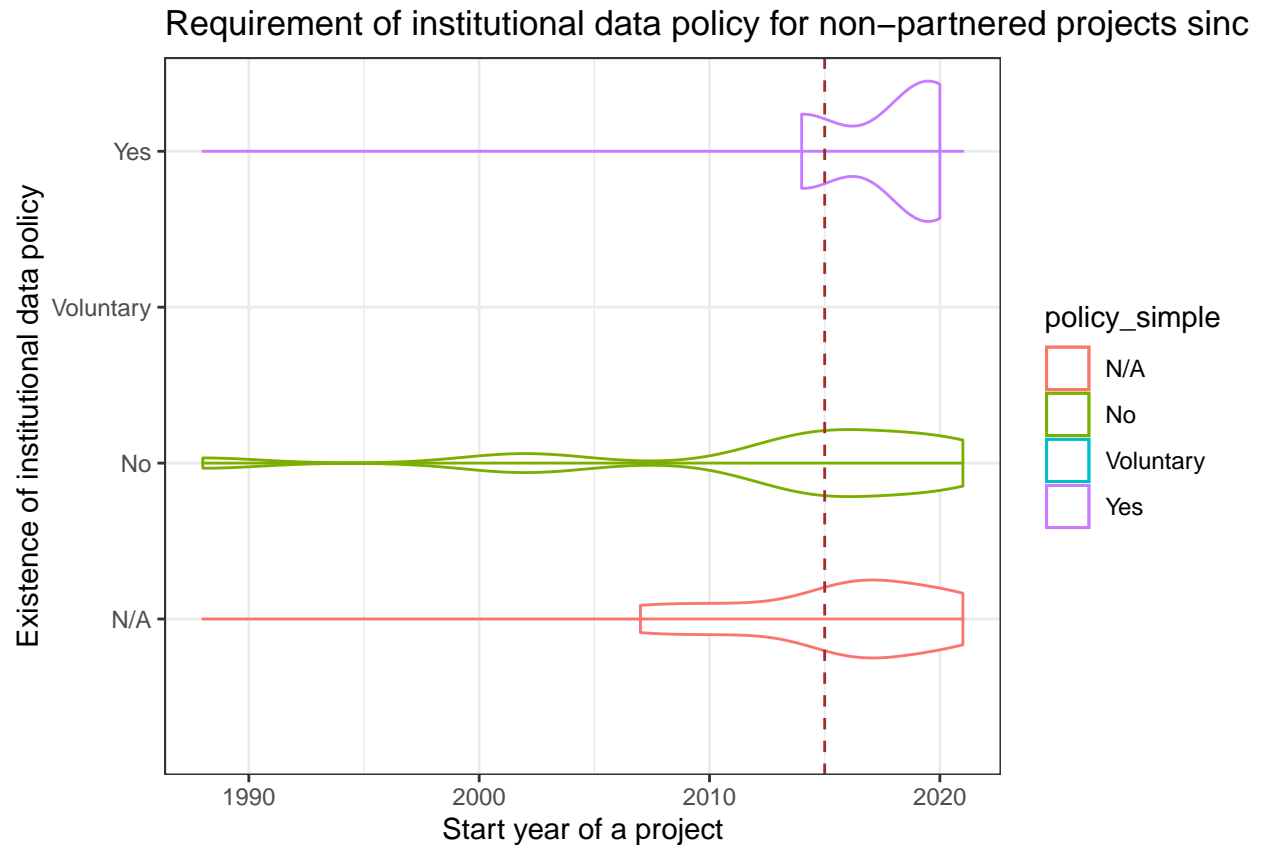
The following chart shows clear geographic differences in implementation of data policies based on the main country where the project is based. France, Germany, and Italy are listed as countries where data policies are required, yet some projects in Germany and Italy answered that no data policies are required. Thus the practical implementation of data policies may depend on particular funding agency or institution, rather than on nation-wide policies. However, our results are only preliminary and based on a very small sample and need to be confirmed by further investigation.

Requirement of institutional data policy for non–partnered projects by c
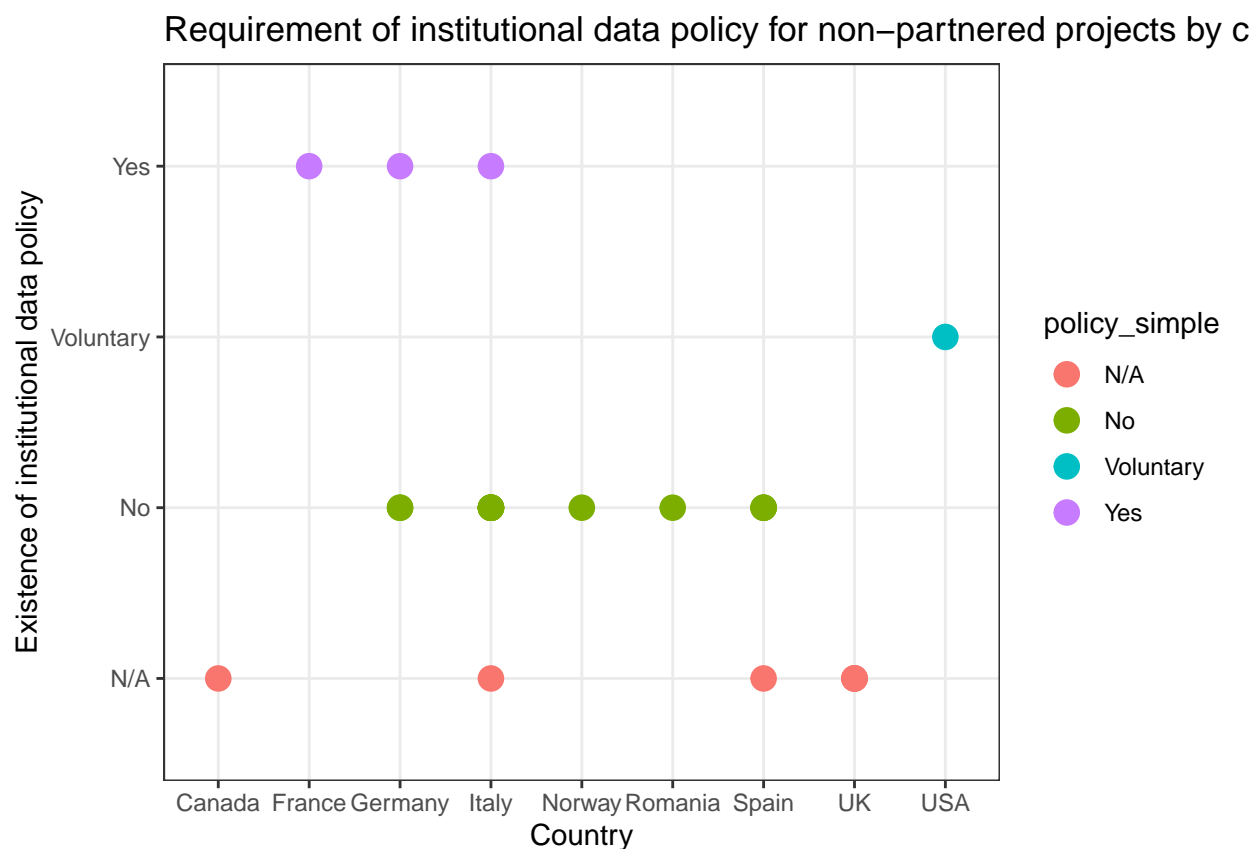
Open Science Practice

Question: *Are you familiar with the FAIR data principles?*

```
## # A tibble: 3 x 3
##   policy      n ratio
##   <chr>   <int> <dbl>
## 1 Yes        19    73
## 2 Vaguely     6    23
## 3 No          1     4
```

Commentary: The majority of projects (73%) is familiar with FAIR data policy, however, 23% of participating projects are familiar only vaguely and would benefit from clear guidelines customised for the epigraphic community. Only 4% of projects are not familiar with FAIR data principles.

Question: *Standardized terminologies: The project uses the following systems:*

To see more data, click on the arrow in the top right hand corner of the table below.

```
##
## 1
## 2                                                            EAGLE vocabular
```

```
## 3
## 4
## 5
## 6                                                        The project suggests the use of
## 7   We created our own thesaurus with OpenTheso tool (EpiVoc) https://thesaurus.mom.fr/opentheso/?idt=
## 8                                         We generated a system for metadata based on the UBC library's a
## 9                                                              We use standard Mycer
## 10                                                       We use the data provided by Ke
##       n ratio
## 1   13    37
## 2    7    20
## 3    6    17
## 4    3     9
## 5    1     3
## 6    1     3
## 7    1     3
## 8    1     3
## 9    1     3
## 10   1     3
```

Commentary: 9% of projects don't use any standardized lists or vocabularies. 37% of projects use their own internal authority lists. EAGLE vocabularies in their original form are used by 20% of projects, and in an edited version by 17% of projects. Several projects, that focus on languages other than Greek and Latin, have created their own systems, sometimes working from existing vocabularies, but also building thesauri, e.g. the response: We created our own thesaurus with OpenTheso tool (EpiVoc) https://thesaurus.mom.fr/opentheso/?idt=th61 and we aligne with existing vocabularies (work still in progress) or We use standard Mycenological terms but the community does not yet have standardized lists..

Question: *Are you willing to share the standardized terminologies used in your project with us (e.g. type of inscription vocabularies, type of material etc.)*

```
## # A tibble: 2 x 3
##   policy_share      n ratio
##   <chr>         <int> <dbl>
## 1 Yes              23    88
## 2 No                3    12
```

Commentary: The vast majority of participating projects (88%) is willing to share any standardized terminologies used in their project, such as terminologies covering the type of inscription vocabularies, the type of material etc.

Question: *Linked Open Datasets: The project uses the following systems:*

To see more data, click on the arrow in the top right hand corner of the table below.

```
##                                       linked_data  n ratio
## 1                                         Pleiades 13    50
## 2                                     Trismegistos 13    50
```

```
## 3                                              EAGLE vocabularies  9    35
## 4                                                            LGPN  7    27
## 5                                                            None  3    12
## 6                                                             PIR  3    12
## 7                          diacritical marks from Leiden (CIL)  1     4
## 8                                                        Geonames  1     4
## 9                          GODOT: https://godot.date/home  1     4
## 10                               I can't remember (sorry!)  1     4
## 11                                                iDaiGazetteer  1     4
## 12                                                           idRef  1     4
## 13 None were yet available: a new edition will want to use all  1     4
## 14                                                         Pactols  1     4
## 15                                                        Period.O  1     4
## 16                                                            PLRE  1     4
## 17                                                      ToposTexts  1     4
## 18                                                    under demand  1     4
## 19    We periodically ask to Trismegistos an ID for our records  1     4
```

Commentary: Pleiades is the most popular LOD dataset, being used in 50% of all participating projects, as well as Trismegistos with 50%. EAGLE vocabularies are represented in 35% of participating projects, while combined prosopographic datasets (LGPN+PIR) in 39% of projects. Only 12% of participating projects do not use any LOD.

Future needs of digital epigraphy

This section covers the wishes of partner projects as well as all participating digital epigraphy projects. The responses were anonymised so no individual or project can be identified but otherwise presented as submitted in the survey.

Partner projects

Question: *Our project would like to be able to use within the next three years:*

To see more data, click on the arrow in the top right hand corner of the table below.

```
##
## 1
## 2
## 3
## 4
## 5
## 6
## 7
## 8 We are not sure what is meant by "epigraphic data" in the preceding entry. If something like a papy
##    n ratio_all_proj
## 1 10             83
## 2  9             75
## 3  9             75
## 4  6             50
## 5  6             50
## 6  5             42
## 7  1              8
## 8  1              8
```

Commentary: The most popular is the option `Bibliographical references to all epigraphic publications with stable URI (e.g. Zenon)` represents the wishes of 83% of all partner projects.

The great interest in prosopographic LOD for is supported by 75% of partner projects for the Roman world and 50% of projects for the Greek world respectively.

The `improved EAGLE vocabularies` are wished for by 75% of partner projects.

The `domain-specific repository for epigraphic data` or the `open and accessible RDF Triplestore` do not seem to be the highest priority of participating projects, but still relatively popular as 42% of responses wishes for one of the two. One participating project wishes specifically for the following: standardised terminologies for instrumentum domesticum and palaeography.

Question: *Potential ideas that our project would benefit from:*

```
##                                                                  lod_i  n
## 1               Set of guidelines for FAIR and Linked Open Data in epigraphy 11
## 2                 Practical scripted examples on how to use LOD in epigraphy  9
## 3                                 Workshop on FAIR principles in epigraphy  7
## 4 Set of guidelines/resources for quantitative analysis of epigraphic data  6
## 5                             Workshop on how to use LOD in epigraphy  6
## 6                                                             <NA>  1
##   ratio_all_proj
## 1             92
## 2             75
## 3             58
## 4             50
## 5             50
## 6              8
```

Commentary: 92% of all projects would benefit from `A set of guidelines for FAIR and Linked Open Data in epigraphy`. There is a general interest in practical examples and workshop(s) on how to use LOD and FAIR Principles in Epigraphy, as well as resources for quantitative analysis of data in epigraphy.

Question: *Additional digital needs*

```
## [1] "Further development of a single research portal to interrogate multiple epigraphic databases; d
## [2] "- Further collaboration and development of concepts for vocabularies. - Getty vocabularies cross
## [3] "Sustainable common platform of all digital epigraphic editions (a Vision)"
## [4] "Advisory Board for new Digital Epigraphy projects, guidelines for FAIR epigraphy"
## [5] "Standards for palaeography, prosopography, bibliograpy, instrumentum domesticum and linguistic a
## [6] "1) Provide us support in switching to Epidoc XML encoding 2) Help us clarify how our data are ac
```

Commentary: This section covers the additional needs of partner projects. Partner projects would like to see a platform linking epigraphic data from multiple sources, including a stable reference point or an API for improved epigraphic vocabularies (in other words, the sort of resource which agreed vocabularies and an RDF triplestore might facilitate). Partner projects would also like to be able to use guidelines for FAIR practices in epigraphy, which currently do not exist.

Non-partnered projects

Question: *Our project would like to be able to use within the next three years:*

To see more data, click on the arrow in the top right hand corner of the table below.

```
##
## 1                              Bibliographical references to all epigraphic publications with stable UR
## 2   EAGLE vocabularies (revised and extended with clear structure + eliminated duplicates + multi-lang
## 3                                       Greek Onomastic data with stable URIs (e.g. LGPN with stabl
## 4                                            One domain specific repository for e
## 5                                              Roman Prosopographical data wi
## 6                                                   Open and accessible RI
## 7
## 8                              Geolocation of inscriptions and searches relate
## 9                         In the case of our project most of the options are
## 10               LGPN does not yet contain Mycenaean names but I would be happy i
## 11                                                   This project is cu
##      n ratio_all_proj
## 1   17             65
## 2   17             65
## 3   13             50
## 4   11             42
## 5   11             42
## 6    6             23
## 7    2              8
## 8    1              4
## 9    1              4
## 10   1              4
## 11   1              4
```

Commentary: The most popular is the option `Bibliographical references to all epigraphic publications with stable URI (e.g. Zenon)` representing the wishes of 65% of all participating projects. The great interest in onomastic and prosopographic LOD for both the Greek and Roman world is supported by 92% of non-partnered projects. The `improved EAGLE vocabularies` are wished for by 65% of non-partnered projects. The `domain-specific repository for epigraphic data` (23%) or the `open and accessible RDF Triplestore` (42%) do not seem to be the highest priority of participating projects, but still a relatively popular response. One participating project wishes specifically for the following: Geolocation of inscriptions and searches related to geography, which other existing projects, such as Pleiades or Trismegistos, might be better equipped to do.

Question: *Potential ideas that our project would benefit from:*

To see more data, click on the arrow in the top right hand corner of the table below.

```
##
## 1                                Set of guidelines for FAIR and Linked Open Data
## 2                               Practical scripted examples on how to use LO
## 3                         Set of guidelines/resources for quantitative analysis of e
## 4                                              Workshop on how to use LO
## 5                                              Workshop on FAIR principle
## 6 In the next three years we planned a few Digital Epigraphy workshops in the frame of the French Sc
```

```
## 7
##    n ratio_all_proj
## 1 22             85
## 2 17             65
## 3 17             65
## 4 16             62
## 5 11             42
## 6  1              4
## 7  1              4
```

Commentary: 85% of all non-partnered projects would benefit from `A set of guidelines for FAIR and Linked Open Data in epigraphy`. There is a general interest in practical examples (65%) and workshop(s) on how to use LOD in epigraphy (62%), as well as resources for quantitative analysis of data in epigraphy (62%). There might be potential synergy in organising workshops in digital epigraphy between some of the participating projects, e.g. `the French School at Athens`.

Question: *Additional digital needs*

```
##  [1] "Digitalization of Roman Inscriptions for dissemination and research"
##  [2] "A workshop on integrating Mycenaean data into epigraphy?"
##  [3] "Data retrieval also on spatial base: for example: from maps of the single archaeological sites
##  [4] "The most important for me would be 1/ to have a more complete view of real FAIR epigraphic proj
##  [5] "It would be very nice (but I might be a bit biased!) if FAIR Epigrahy would like to help devel
##  [6] "I would love to see it revitalized and improved with FAIR and Linked Open Data guidelines and
##  [7] "Unicode for Punic"
##  [8] "help to act in a shared dedicated academical environment and help in spreading our results"
##  [9] "FAIR Epigraphy's team can help us by providing advice on specific topics"
## [10] "It would be useful to have an Open Access database of images of inscriptions that are free fro
```

Commentary: This section covers additional needs of participating digital projects. Some of the wishes might be beyond the scope of the FAIR Epigraphy project but the responses provide valuable guidance and hint to some of the challenges the epigraphic discipline will be facing in the near future. The responses may inspire other projects with similar needs to join forces and potentially develop the solution together. The FAIR Epigraphy project may offer one channel to explore and collaborate on the meeting of these needs in future.

Summary

The present report demonstrates a great variation in the epigraphic discipline in 2022. Although the majority of participating projects record inscriptions in Latin and Greek, we see a diverse array of projects expanding beyond the traditional boundaries of the discipline. The projects participating in the survey involve well-established projects that have existed over several decades, regional or thematic corpora, and more specialised, short-term PhD projects. We have observed a clear distinction between on the one hand projects with a long tradition and most importantly with relatively stable institutional support, which have access to institutional repositories, policies and IT services and other, small-scale projects with limited support and access to resources and training, typified by to short-term projects on a specific topic that may lack access to long-term institutional support. One of the missions of the FAIR Epigraphy project is to support projects with limited access to resources by providing accessible and comprehensible training and guidelines for FAIR and Linked Open Data principles in epigraphy.

The established projects mostly follow the FAIR principles, although to a variable extent. The majority of established projects share their data under a Creative Commons license in one or more widely accepted formats (with Epidoc XML being the most popular format for all types of projects irrespective of their status and longevity). In general, the more established projects provide more access points to their data as well as more data formats than the projects with less institutional support. The use of standardized terminologies is still limited and project-specific, mostly due to the lack of uniformly accepted standards. On contrary, the adoption of Linked Open Datasets (LOD) and creation of links within the epigraphic datasets with stable identifiers to those LOD sources seems to be fairly advanced, especially in the case of well-established LOD domains such as Pleiades or Trismegistos, and to a lesser extent the EAGLE vocabularies.

The non-partnered projects follow the FAIR principles, but to a lesser degree than the established projects. There are, however, some short-time projects that fulfill or exceed the requirements for Open Science, but as a general rule the compliance is lower than in the case of established projects. The reason for lower compliance is most likely a combination of only a short-term institutional support, limited access to IT support, poor accessibility of guidelines and discipline specific training.

As to the current and future needs of digital epigraphy, there is a clear demand for more LOD, especially for bibliographical references to standard epigraphic corpora, standardisation of discipline-specific vocabularies (improved EAGLE vocabularies), and prosopographic LOD for the ancient world, all supported by training and providing accessible resources and sets of guidelines for FAIR and Open epigraphy. The need for an accessible and open platform connecting and linking various epigraphic resources through a single access point is generally supported, building on the experience of the EAGLE Project, but now exploiting the model of Linked Open Data.

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