



Research Squirrel Engineers

Linked Pipes



@ Linked Pasts 7 - Ghent

by Florian Thiery @fthierygeo | Timo Homburg @situxx



HOCHSCHULE MAINZ
UNIVERSITY OF
APPLIED SCIENCES

Römisch-Germanisches
Zentrum für Archäologie
Leibniz-Forschungsnetzwerk
für Archäologie

R | G | Z | M

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First of all: Respect the Code of Conduct!

- https://drive.google.com/file/d/10iQnswiuPbAaUxu_s4QCnTd6YGZxg96k/view

The [Programme Committee](#) of Linked Pasts 7 is dedicated to a **respectful and inclusive environment for everyone**, regardless of gender, gender identity and expression, age, sexual orientation, disability, appearance, ethnicity or religion. To guarantee that everyone feels safe, we clarify what behaviour is expected. Participants should behave accordingly and aim to interact in a respectful manner towards other attendees. Live sessions of the symposium will be moderated by the Programme Committee. Participants are kindly requested to adhere to the decision of the moderators regarding time management.

Linked Pasts specifically **encourages positive interactions**, such as active listening, providing positive feedback, open-minded discussions and collaborative reflection. It is self-evident that Linked Pasts will **never condone any form of conduct that might reasonably be expected to cause harm to other participants** (i.e. harassment). Please remember that negative behaviour lies not only in major offences, such as intimidation or stalking, but can also materialise in smaller acts of verbal or non-verbal disrespectful behaviour. This includes, for example, continuously disrupting conference activities or producing/sharing non-consensual images or recordings of participants.

We ask participants to keep this guidance in mind at all conference-related activities, whether live or asynchronous. We encourage you to mediate in overheated discussions to keep participants from harm. If you are not comfortable with intervening, members of the Programme Committee are readily available to assist. Participants who are asked to cease any form of harassing behaviour are expected to comply immediately. Linked Pasts 7 has a zero-tolerance policy towards major offences. Anyone violating the Code of Conduct in this manner will be asked to leave immediately and not return for the duration of the Linked Pasts symposium. The Programme Committee reserves the right to report the behaviour to the relevant institutions if this is deemed necessary.

Who we are...



Research Squirrel Engineers



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FELLOW
PROGRAMM
FREIES
WISSEN



Data Dragon



Timo Homburg
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0000-0002-9499-5840
i3mainz, Hochschule Mainz,
Germany



Open
Geospatial
Consortium



Research Squirrel Engineers

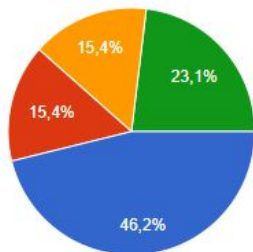


Toposcan Scanluxury from the Noun Project (globe + head)
Derivative work by Florian Thiery and Sophie Charlotte Schmidt, of Archaeologist by Noun from
the Noun Project, dig by Manthana Chalawong from the Noun Project and archaeology by
Pitachara Bunthacharya, TH from the Noun Project under CC BY 3.0 (archaeologist)

Who are you?

Linked Open Data Skill-Level

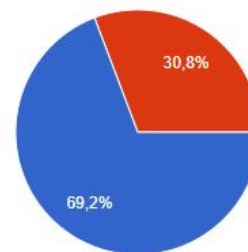
13 Antworten



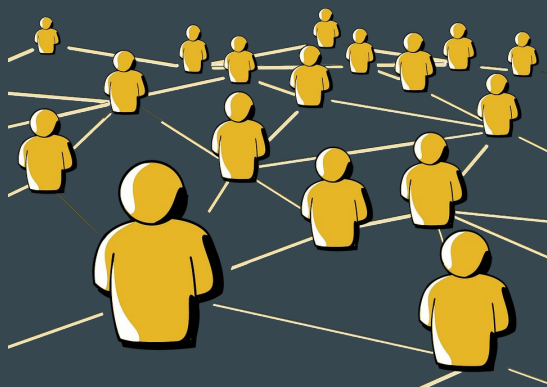
- Layman (I want to learn how to document my research workflow with LD)
- User (I mainly use linked data resources for my work)
- Knowledge graph creator (I create own vocabularies/ontologies and publish LD resources)
- Expert (I conduct active research in the creation and application of knowledge...)

Wikidata Skill-Level

13 Antworten

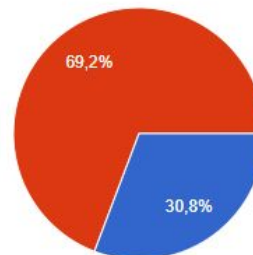


- I am a normal user
- I am an active editor
- I do not know what Wikidata is



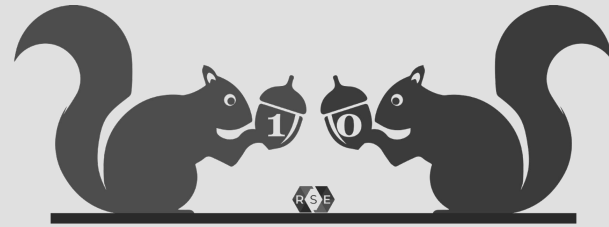
I had contact with Linked Pipes before:

13 Antworten

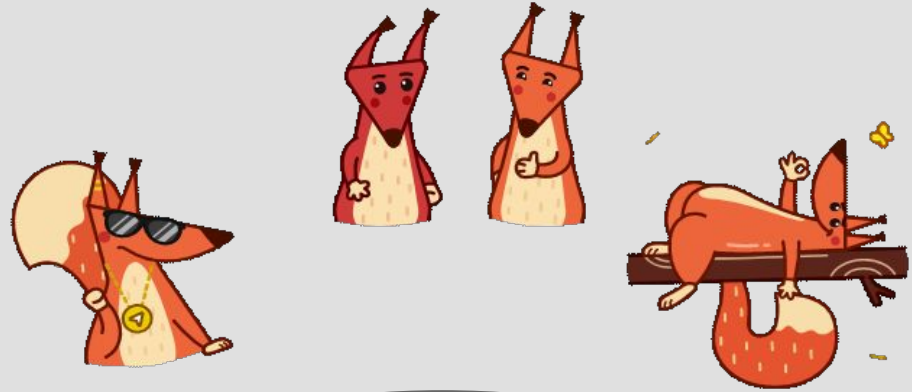
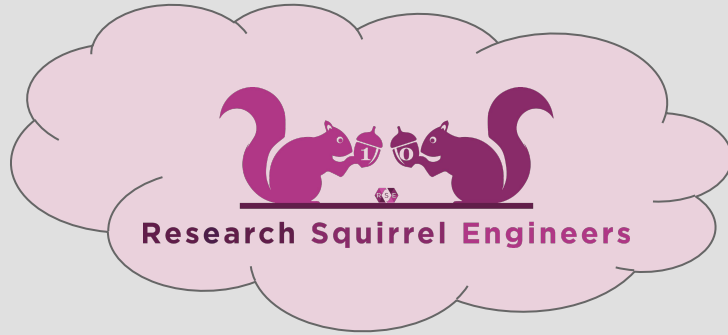


- Yes
- No

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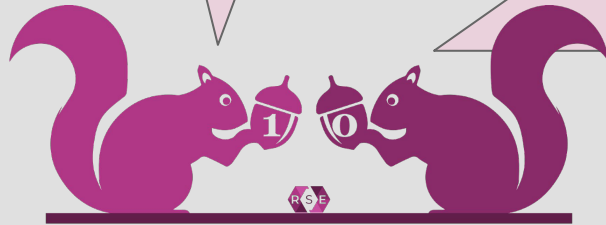


Research Squirrel Engineers



One important aspect on the individual level is forming a **community for networking and support.**

We are
Research Squirrels
and interested in
Open Science and **Linked
Data.**



Research Squirrel Engineers

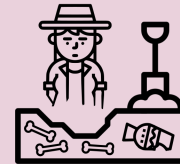
We have currently a background in
**Research Software
Engineering,**



Geoinformatics



and
Cultural Heritage.

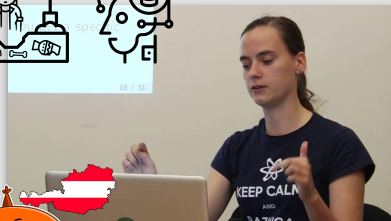


Tippawan Sookrsay from the Noun Project (globe + head)
Derivative work by Florian Thiery and Sophie Charlotte Schmidt of Archaeologist by Nhor
from the Noun Project, dig by Manthana Chaiwong from the Noun Project and
archaeology by Phatchara Bunkhachary, TH from the Noun Project under CC BY 3.0
(archaeologist)



Sophie

@idhrenil
0000-0003-4696-2101



Martina

0000-0003-0485-6861



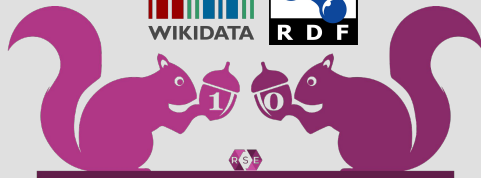
Florian

@fthierygeo
0000-0002-3246-3531



Timo

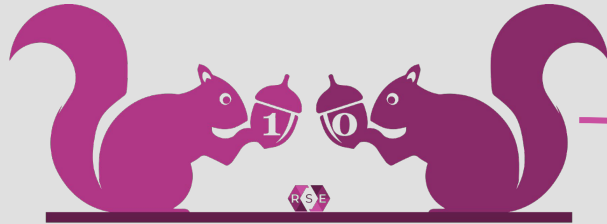
@situxxx
0000-0002-9499-5840



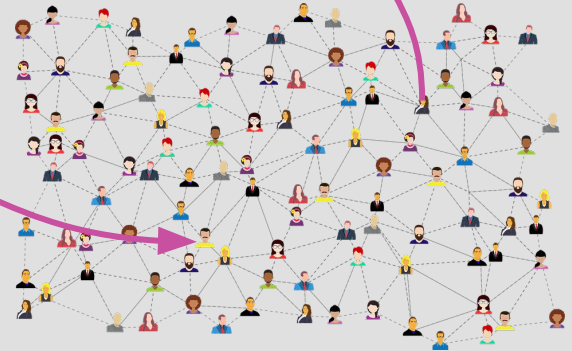
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Tippawan Sookruay from the Noun Project (globe + head)
Derivative work by Florian Thiery and Sophie Charlotte Schmitt of Archaeologist by Nhor
Team from the Noun Project, dig by Manthana Chaivong from the Noun Project and
archaeology by Phatchara Bunkhachary, TH from the Noun Project under CC BY 3.0
(archaeologist)

**deRSE e.V.
DH-RSE
CAA International & CAA German Chapter
CAA SIG Data-Dragon & CAA SIG Scientific Scripting Languages
CAA Little Minions Group
ISAAK - Initiative for Statistical Analysis in Archaeology Kiel
Linked Pasts (Linked Pipes Working Group)
Wikimedia Germany (Fellow-Program Freies Wissen Fellows)**



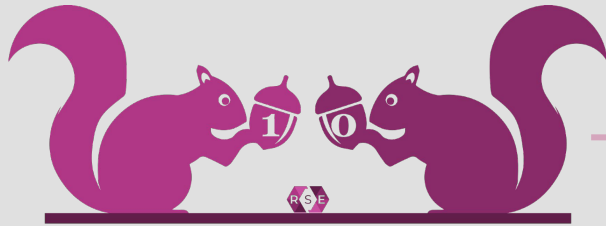
Research Squirrel Engineers



Research Squirrel Working Groups

* SPARQLing Unicorn QGIS Plugin

* Linked Open Ogham Data



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Tippanwan Sookruay from the Noun Project (globe + head)
Derivative work by Florian Thiery and Sophie Charlotte Schmidt of Archaeologist by Nihar
from the Noun Project, dig by Manithana Chaiwang from the Noun Project and
archaeology by Phatchara Bunkhachary, IT from the Noun Project under CC BY 3.0
(archaeologist)



Research Squirrel Engineers

Project



QGIS



GitHub



**The SPARQLing Unicorn QGIS Plugin
- a Linked Data Access Point for QGIS**



Research Squirrel Engineers

Project

<http://ogham.link>



Riesenspatz Infoillustration für Wikimedia Deutschland,
Illustration Sichtbarkeit englisch, CC BY-SA 4.0

Irische -#-/- Steine im Wikimedia Universum [Bearbeiten]



I love datal

UCC Stone Corridor, Stein
4, CIIC 81

CIIC 81 nach Macalister
(1945)

CIIC 180, Enlagh East
(IMLEACH DHÚN
SEANN), Co. Kerry

Das Ogham-Alphabet



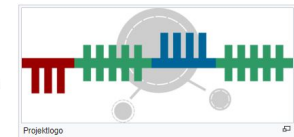
FELLOW
PROGRAMM
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WISSEN

Projektbeschreibung [Bearbeiten]

Im Rahmen des *Fellow-Programms Freies Wissen* möchte ich im Sinne offener Wissenschaft eine für alle im Sinne der *Knowledge Equily* frei zugängliche, semantisch beschriebene, transparente *Linked Open Data*^[1] (LOD) Datensammlung irischer Ogham Steine^[2] erstellen. Diese Sammlung wird auf bereits bestehenden publizierten Forschungen aufbauen und kann dadurch als weiteres wichtiges Forschungstool im Bereich der frühmittelalterlichen Inschriften dienen.

Auf privaten Reisen durch Irland sind mir insbesondere im westlichen Teil der grünen Insel, in den Counties Kerry und Cork, an diversen Stellen Hinweise auf eine mysteriöse Schrift und Steine als deren originale Inschriftenträger begegnet. Nach einer ersten Recherche stellten sich diese als Ogham-Steine mit einer frühmittelalterlichen Ogham-Schrift, als eine der bemerkenswertesten nationalen Schätze Irlands heraus. Ogham-Steine wurden in Irland und im westlichen Teil Britanniens zwischen dem 4. und 9. Jahrhundert aufgestellt. Die auf den Steinen eingemeißelten Inschriften zeigen insbesondere verwandtschaftliche oder Stammes-Beziehungen und könnten so als Grabsteine oder Flächenabgrenzungen gedient haben. Sie sind eine wichtige Quelle für Historiker, aber auch für Sprachwissenschaftler und Archäologen. Um einer großen Forschungscommunity diesen reichhaltigen Schatz eines kleinen überschaubaren Korpus an Inschriften und Steinen als freies Wissen nahezubringen, entstand die Idee des *Op-Ogham Projektes*^[3]. Diese Idee wurde mit Freunden in einer Freizeit-Working-Group, den *Research Squirrel Engineers*^[4], aufgenommen. Hierdurch sind bereits erste Modellierungen und Publikationen von Steinen nach Macalister^[5] entstanden.

Die semantische Modellierung soll dabei in zwei Arten erfolgen. Zum Einen sollen die Daten (Steine, Fundorte, Wörter, Personen, etc.) in Wikidata abgelegt werden, um so die Daten in der Linked Data Cloud verorten und der Community die Möglichkeit zu bieten sich an freiem Wissen im Bereich der Ogham Inschriften zu beteiligen. Dies kann z.B. auch durch Bilder von Ogham-Steinen in Wikimedia Commons geschehen sowie der Ergänzung und Übersetzung der erklärenden Wikipedia Seiten. Zum Anderen sollen die Daten in einer eigenen Ogham-Ontologie gespeichert, über einen SPARQL Endpoint zur Verfügung gestellt und mit den in Wikidata vorliegenden Steinen verknüpft werden. Dies ermöglicht eine tiefergehende semantische Modellierung der Ogham Steine und deren Inschriften und kann somit zum offenen und freien wissenschaftlichen Diskurs beitragen. Die Ogham Steine sollen darüber hinaus in einer community-freundlichen Webplattform eine Suche auf Wikidata und in anderen Triplstores ermöglichen. Dabei sollen Filtermöglichkeiten zu bestimmten Themen, wie benutzte Wörter, Material oder Personen, sowie nach geographisch abgrenzbaren Bereichen möglich sein. Zudem soll eine Integration in freie GIS Software ermöglicht werden, so dass Wissenschaftler weitere Analysen in ihrer eigenen Softwarewelt durchführen können.



Projektlogo

Irish Ogham Stones at the Wikimedia Fellow Program (Florian Thiery)



Research Squirrel Engineers

Project

<http://smasheddishes.squirrel.link>



Riesenspatz Infoillustration für Wikimedia Deutschland,
Illustration Sichtbarkeit englisch, CC BY-SA 4.0

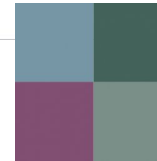
Zerschlagenes Geschirr - Archäologische Quellen in Wikidata [\[Bearbeiten \]](#)



Von einem ehrenamtlichen Bodendenkmalpfleger gesammelte Scherben der Rössener Kultur

Ein in Brandenburg an der Havel gefundenes Gefäß der Rössener Kultur

Stichbandkeramisches Geschirr aus Benditz



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Projekt mit ehrenamtlichen Bodendenkmalpfleger*innen [\[Bearbeiten \]](#)

Ehrenamtliche Bodendenkmalpfleger*innen sind für die archäologische Forschung von großer Bedeutung, da sie neue Fundstellen finden und auch von bekannten Fundstellen Funde aufsammeln und den Landesdenkmalämtern bekannt machen. Es fehlt jedoch eine Plattform für die Ehrenamtlichen, ihre Funde der Öffentlichkeit zu präsentieren. Einzelne Funde oder Fundkomplexe sind nicht unbedingt für einen eigenen Eintrag in Wikipedia geeignet. Wikipedia ist jedoch verknüpft mit der Wikimedia Commons, in der Fotos hochgeladen werden können und der Wikidata, einer Plattform, in der Informationen gesammelt werden können, ähnlich wie eine übergreifende und von allen editierbare Datenbank. In diesem Projekt wird ein Workflow entwickelt, der Ehrenamtlichen die Arbeit mit Wikimedia und Wikidata vereinfachen soll und dieser Workflow interessierten ehrenamtlichen Bodendenkmalpfleger*innen beigebracht.

Smashed Dishes at the Wikimedia Fellow Program (Sophie C. Schmidt)



Research Squirrel Engineers

Project

<https://t1p.de/gqyz>



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A Linked and Open Bibliography for Aegean Glyptic in the Bronze Age [Bearbeiten]

Inhaltsverzeichnis [anzeigen]

Projektbeschreibung [Bearbeiten]

(English version below)

In meiner Doktorarbeit beschäftige ich mich mit mehrseitigen agäischen Siegeln, also Siegeln, die mehr als eine Fläche zum Siegeln besitzen. Sie sind alle in dem „Corpus der Minoischen und Mykenischen Siegel“ (CMS) erfasst. Das CMS ist ein seit 1956 bestehendes Langzeitprojekt, das alle bekannten agäischen Siegel einheitlich dokumentieren und veröffentlichen will. Das Projekt wurde in Marburg gegründet und ist 2011 nach Heidelberg gezogen. 2007 wurden die Siegel alle in der Objektdatenbank *Archane* der Universität Köln und des Deutschen Archäologischen Institutes eingetragen.

Neben dem CMS-Archiv und den Datenbanken, gehören die 25 Bände der CMS-Reihe und die neun Beihefte mit zu den wichtigsten Forschungsinstrumenten in der agäischen Glyptik. Einige CMS-Bände stehen als Digitalisate frei zur Verfügung (<http://books.ub.uni-heidelberg.de/proj/aeum/catalog/series/cms>). Dazu gehört auch eine vor kurzem digitalisierte Bibliografie zur bronzzeitlichen agäischen Glyptik von John G. Younger ("A Bibliography for Aegean Glyptic in the Bronze Age" (1991), <http://dx.doi.org/10.11588/proj/aeum.367.518>).

Diese Bibliografie bietet einen idealen Einstiegspunkt in den Forschungsbereich der agäischen Glyptik, zumal die Referenzen auch thematisch und geografisch verschlagwortet sind. Literatur zu agäischen Siegeln, die nach 1990 erschienen ist, ist in dem Werk nicht mehr vertreten und eine neuere Bibliografie ist bisher nicht erschienen. Zwar gibt es für die agäische Archäologie im Allgemeinen zwei online verfügbare Bibliografien (*Open Library for Aegean Archaeology* und *Nestor*) und für ausgewählte neuere Publikationen zur agäischen Glyptik im Speziellen eine Liste auf der Website des CMS, jedoch sind diese Quellen entweder zu allgemein oder zu statisch.

Mit diesem Vorhaben soll auf Grundlage von Younger's Bibliografie eine interaktive online verfügbare und zukünftig erweiterbare Bibliografie erstellt werden, die neben verschiedenen Filterfunktionen auch einen Export der Einträge für die persönliche Literaturlistenbank bietet. Dabei sollen auch weitere Informationen, wie Links auf den Volltext oder auf die digitale Repräsentation der erhaltenen Siegel in der Objektdatenbank *Archane*, sowie Verknüpfungen innerhalb der Bibliografie (Welches Werk wird in welchen Werken referenziert?) berücksichtigt werden.

Die einzelnen Einträge können dabei in Wikidata eingetragen werden, was jedem eine Korrektur und Ergänzung ermöglicht. Diese Daten können dann über einen gesonderten Webauftritt in der gewünschten Form angezeigt und zum Export angeboten werden.

Weitere Informationen:

- Wikidata Dataset Import
- GitHub Repository
- Prototyp der Weboberfläche (A)
- Prototyp der Weboberfläche (B)



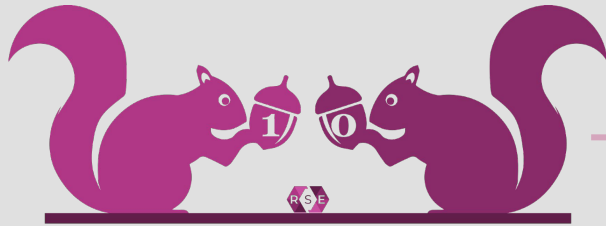
Eine Seite eines vierseitigen Siegels ⁴²
aus grünem Jaspis. / A side of a four-
sided green jasper seal. (CMS II.2.316d)

Aegean Glyptic at the Wikimedia Fellow Program (Martina Trognitz)

Research Squirrels are active in CAA SIGs

*** CAA SIG Data-Dragon**

*** CAA SIG SSLA**



Research Squirrel Engineers



Tipawan Sookruay from the Noun Project (globe + head)
Derivative work by Florian Thiery and Sophie Charlotte Schmidt of Archaeologist by Nhor
from the Noun Project, dig by Manthana Chaiwang from the Noun Project and
archaeology by Phatchara Bunkhachary, TH from the Noun Project under CC BY 3.0
(archaeologist)



Data Dragon

**The CAA community established the
CAA Special Interest Group on
Semantics and LOUD in Archaeology (SIG Data-Dragon).**



Data Dragon

Special Interest Group

CAA SIG

“Semantics and LOUD in Archaeology”



“We would like to further establish **Linked Data** in **archeology**, enable **beginners** to use and produce Linked Data, invite other **scientists** for discussion, and embed LOD as an **important topic** through an **SIG** at the **CAA** conference and **community**.”

<http://datadragon.link>
join the **SIG**: **<https://t1p.de/datadragon>**



**The CAA community established the
CAA Special Interest Group on
Scientific Scripting Languages in Archaeology (SIG SSLA).**



Special Interest Group

CAA SIG

“Scientific Scripting Languages in Archaeology”



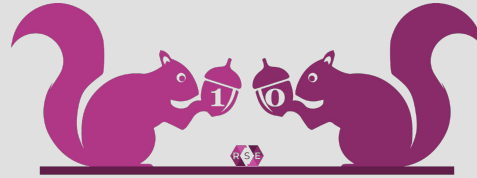
“The purpose of the CAA Special Interest Group Scientific Scripting Languages in Archaeology is to promote the widespread implementation of computer scripts in archaeology. We will provide an exchange platform for scientists in and around archaeology who use scripting languages to conduct major or minor parts of their research.”

Examples of popular scripting languages in archaeology and other sciences include, but are not limited to:

R, Python, Bash, Netlogo, Stan, OxCal, JavaScript, SQL, ...

<https://sslarch.github.io>

Do you want to be a Research Squirrel?



Research Squirrel Engineers

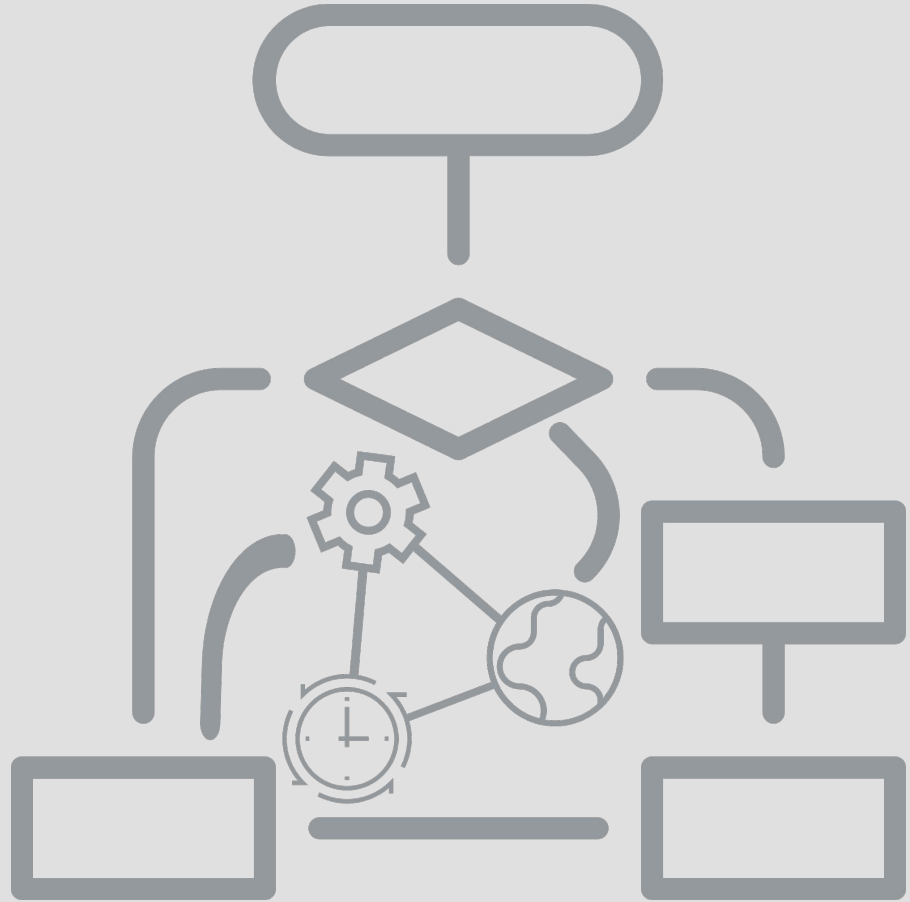


Join us!



Tippawan Sookruay from the Noun Project (globe + head)
Derivative work by Florian Thiery and Sophie Charlotte Schmidt of Archaeologist by Nhor
from the Noun Project, dig by Manthana Chaiwong from the Noun Project and
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(archaeologist)

Linked Pipes ~ History



Linked Pipes History! Linked Pasts IV - Mainz, Germany



Prof. Leif Isaksen (University of Exeter) and Prof. Kai-Christian Bruhn (HS Mainz) welcome the guests of the LinkedPasts conference, Photo: Vanessa Liebler for mainzed, cc-by 4.0

One of the breakout groups discusses during the symposium. At the end, all the results were brought together. Photo: Svenja Schwerdtfeger, cc-by 4.0



Linked Pipes History! Linked Pasts 5 - Bordeaux, France



Florian Thiery, CC BY 4.0,
via Wikimedia Commons



<https://doi.org/10.5281/zenodo.3567928>

Linked Pipes History! Linked Pasts 5 - Bordeaux, France



*Florian Thiery, CC BY 4.0,
via Wikimedia Commons*



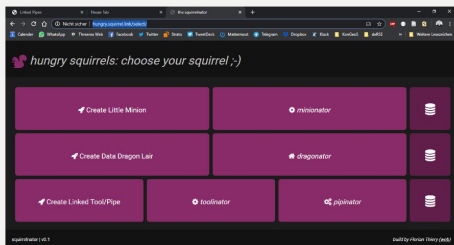
*Florian Thiery, CC BY 4.0,
via Wikimedia Commons*



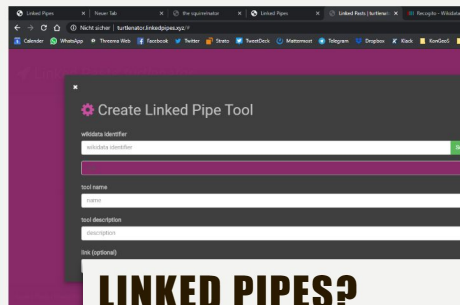
*Florian Thiery, CC BY 4.0,
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The Hungry Squirrel Workflow

HUNGRY SQUIRRELS



CREATE A TOOL



RECOGITO AS TURTLE

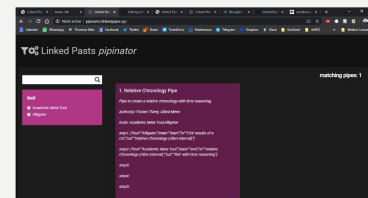
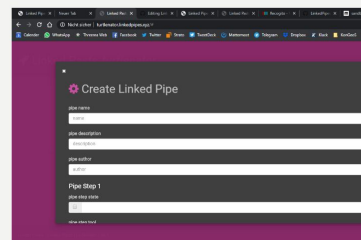
```
# Recognito
tool:7FGCEY65 a rset:Tool .
tool:7FGCEY65 a rset:LinkedTool .
tool:7FGCEY65 owl:sameAs wd:Q74692524.
tool:7FGCEY65 rset:name "Recognito".
tool:7FGCEY65 rset:wikidataid "Q74692524".
tool:7FGCEY65 rset:description "Semantic Annotation tool for texts and images, developed by Pelagios Commons".
tool:7FGCEY65 rset:dateOfEntry "2019-11-13 8:54:52".
tool:7FGCEY65 rset:link <https://github.com/pelagios/recogito2>.
tool:7FGCEY65 rset:link <https://recogito.pelagios.org>.
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tool:7FGCEY65 rset:outputFormat rset:TTL.
tool:7FGCEY65 rset:outputFormat rset:RDF-XML.
```

LINKED PIPES

- The Linked Pipes semantic modelling is based on the RSE Tools Ontology, which is available as OWL file via the Research Squirrel Engineers.
- The ontology assumes that a tool is linked into the Linked Open Data Cloud via **Wikidata**.

<https://doi.org/10.5281/zenodo.3688792>

LINKED PIPES?
GIVE A NAME, DESCRIPTION, AN AUTHOR
COPY THE TRIPLE, PULL IT AND FILTER THEM...



Linked Pipes History! Linked Pasts 6 - London, GB

Cluster 1: Aligning linked (geo-)data and tools

Launch event:

- Weds Dec 2, 15:00
- (Zoom link and password emailed to all [registered for LP6](#))

Activity 1.1 Linking Geo-data through Test and Play

Mon 7 Dec 16:00 GMT Living with Machines' DeezyMatch demo

Tues 8 Dec 15:00 GMT DeezyMatch discussion, followed by presentation of Linked Pipes

Thurs Dec 10 15:00 GMT [World Historical Gazetteer](#) demo

[Example data and links](#)

[Some notes from the presentation \(feel free to add comments and questions\)](#)

Fri Dec 11 15:00 GMT World Historical Gazetteer discussion

Mon Dec 14 15:00 GMT Heritage Connector demo

Tue Dec 15 15:00 GMT Heritage Connector discussion

Wed Dec 16 14:30 GMT Roundtable discussion

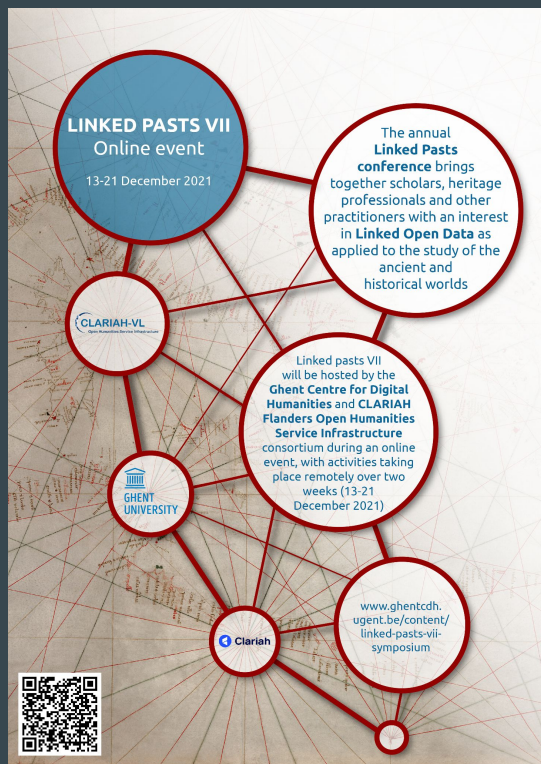
The screenshot shows the website for the Institute of Classical Studies (ICS) at the School of Advanced Study, University of London. The page is titled "Linked Pasts 6" and is dated December 2-16, 2020. It features a navigation menu with options like "About Us", "Publications", "Research", "Awards", "People", "Students", "Library", "Blog", "Public Engagement", and "Events". The main content area includes a list of "Events" such as "Special Events", "Seminar & Lecture Series", "Conferences & workshops", and "Podcasts". A featured event is the "Linked Pasts 6, University of London and British Library, December 2-16, 2020". The text describes the annual conference, which brings together scholars, heritage professionals, and others. It notes that the conference is more goal-oriented than a conventional academic conference and is developed and revised by all participants. The event is held at the University of London and British Library in December 2020, lasting over two weeks. It includes an in-person component at the beginning and end, with the main part being online. The conference is free, but advance registration is required. There is a search bar in the top right corner and a small image of a document or map.

- Creating a Linked Pipes Working Group
- Extend the Ontology
- Collect Linked Tools and Linked Pipes
- ...

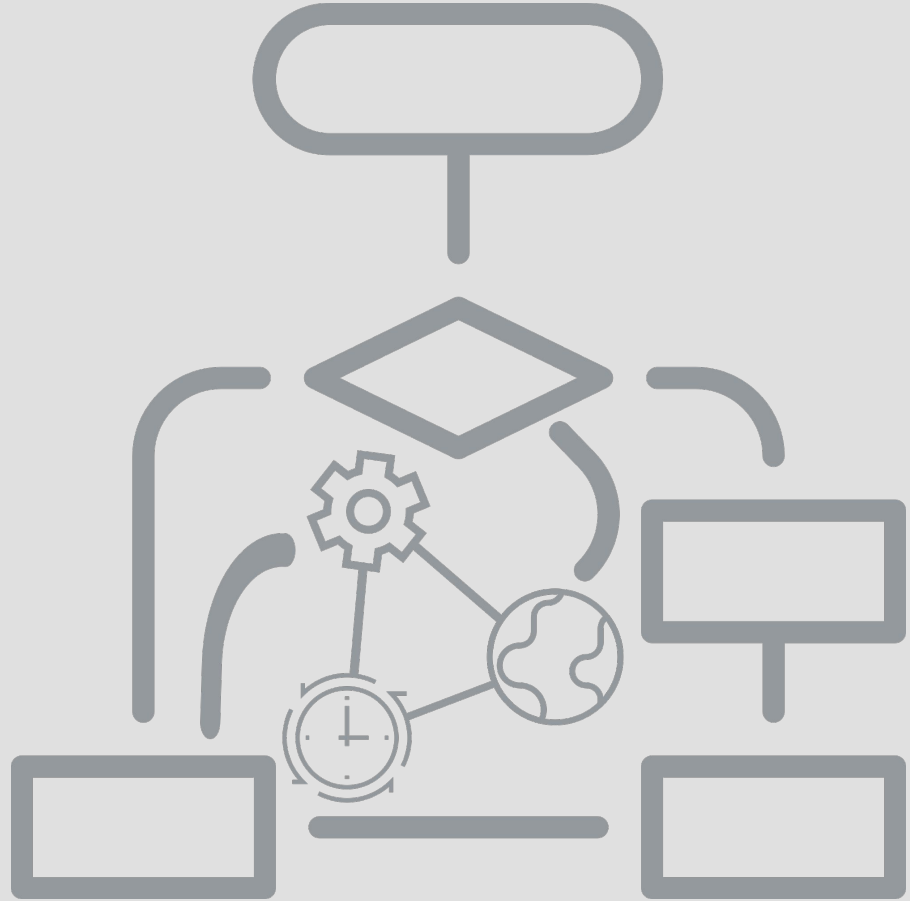
Next Steps

<https://doi.org/10.5281/zenodo.4311282>

Linked Pipes History! Linked Pasts 7 - Ghent, Belgium

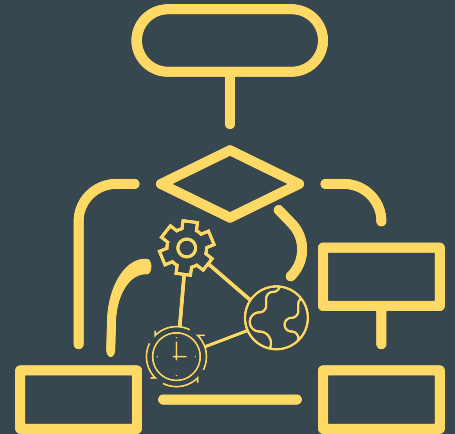


Linked Pipes ~ The Idea



The Linked Pipes Idea!

- Workflows exist in Linked Data and we would like to visualize them using
 - the Provenance Ontology (PROV-O)
 - the Dataflow Ontology (DFD)
- Workflows are not necessarily published in Linked Data, but we would like to document them, e.g. for a research publication
- Questions:
 - Which workflow elements are in fact essential?
 - Which workflow contents would you document/omit? Granularity?
 - Which documentation of data and processes are interesting?
- related work
 - http://researchgate.net/publication/356020260_A_Framework_for_Creating_Knowledge_Graphs_of_Scientific_Software_Metadata



Data Flow Diagrams (DFD)

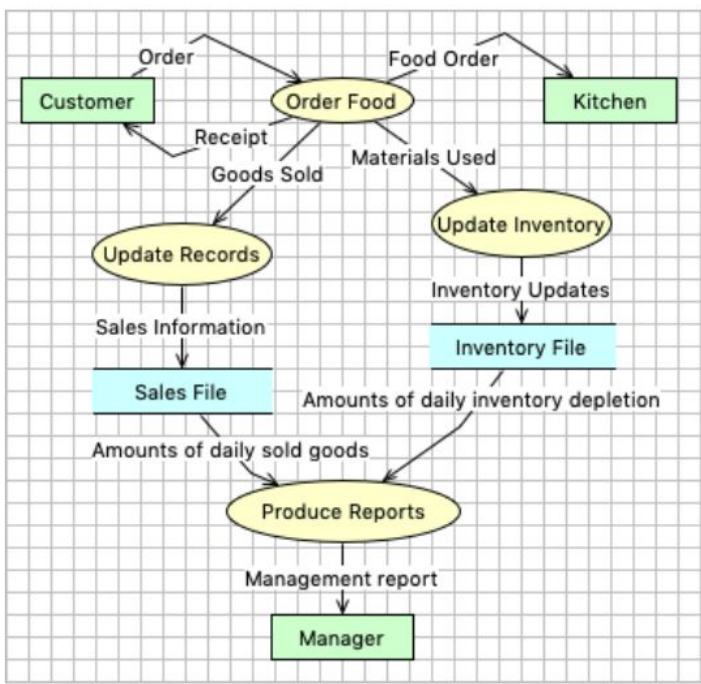


Figure 1 Example of a Data Flow Diagram (inspired from [9])

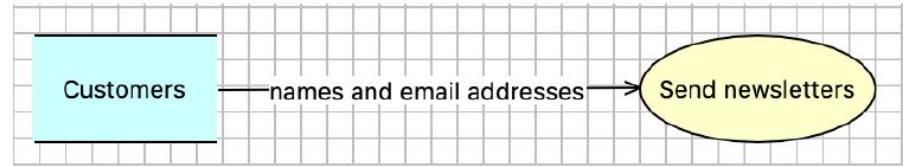


Figure 3 DFD for the process of sending newsletters

```
:Customers a dfd:DataStore ;
rdfs:label "Customers" .

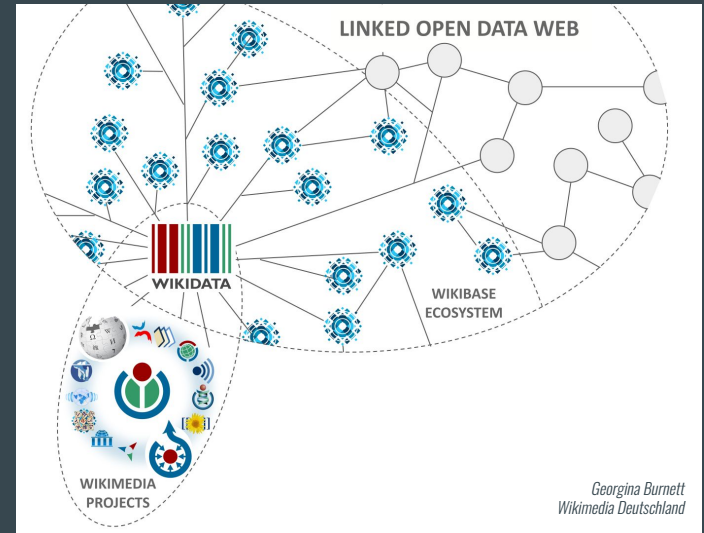
<http://example.org/Send+newsletters>
a dfd:Process ;
rdfs:label "Send newsletters" .

<http://example.org/names+and+email+addresses>
a dfd>DataFlow ;
rdfs:label "names and email addresses" ;
dfd:from :Customers ;
dfd:to <http://example.org/Send+newsletters> .
```

Listing 2 An RDF representation of the DFD in Figure 3

Citable Tools published via Wikidata

- Why Wikidata? easy to use and part of the LOD Cloud!
- Wikidata Project: Linked Pipes
 - https://www.wikidata.org/wiki/Wikidata:WikiProject_LinkedPipes
- How to create a “Linked Pipe Tool”?
 - used by (P1535) Linked Pipes (Q73897190)
 - <https://w.wiki/4WsG>



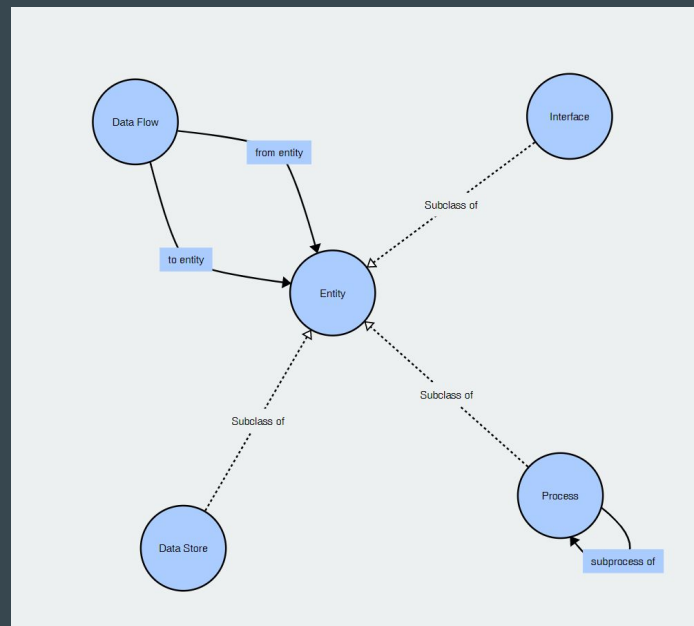
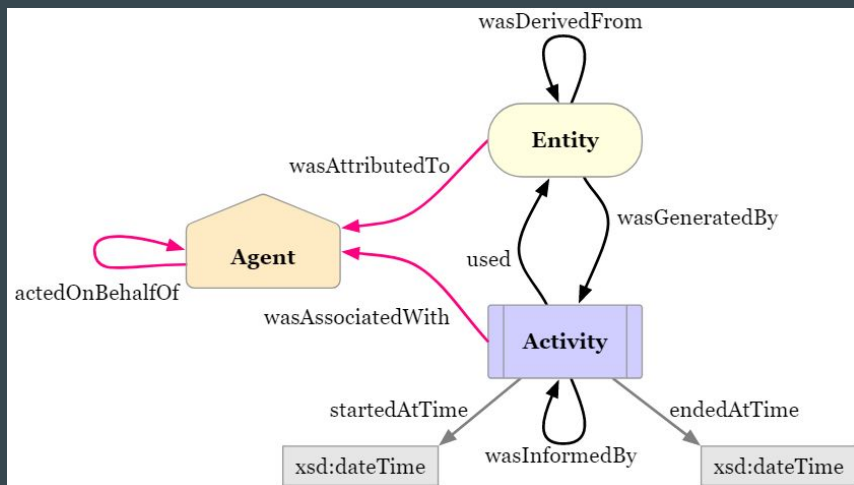
Some Linked Pipe Tool Examples...

- SPARQLing Unicorn QGIS Plugin
- Recogito
- RDF4J
- Academic Meta Tool
- ...

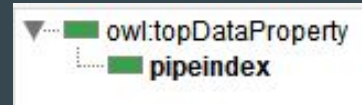
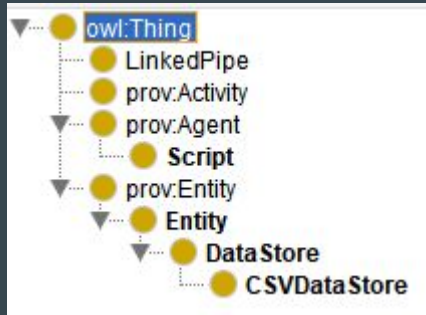


The draft Linked Pipes Ontology...

- extension of DFD and PROV-O
 - <https://chrdebru.github.io/ontologies/dfd/index-en.html>
 - <https://www.w3.org/TR/prov-o/>



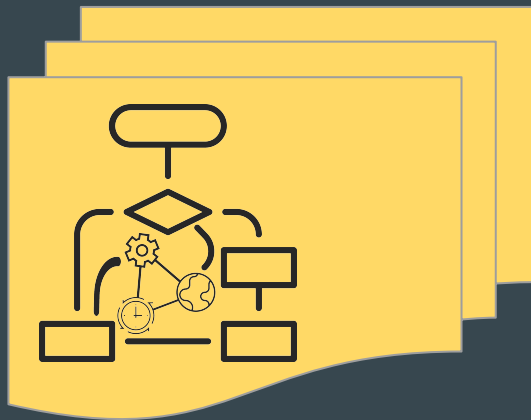
The draft Linked Pipes Ontology...



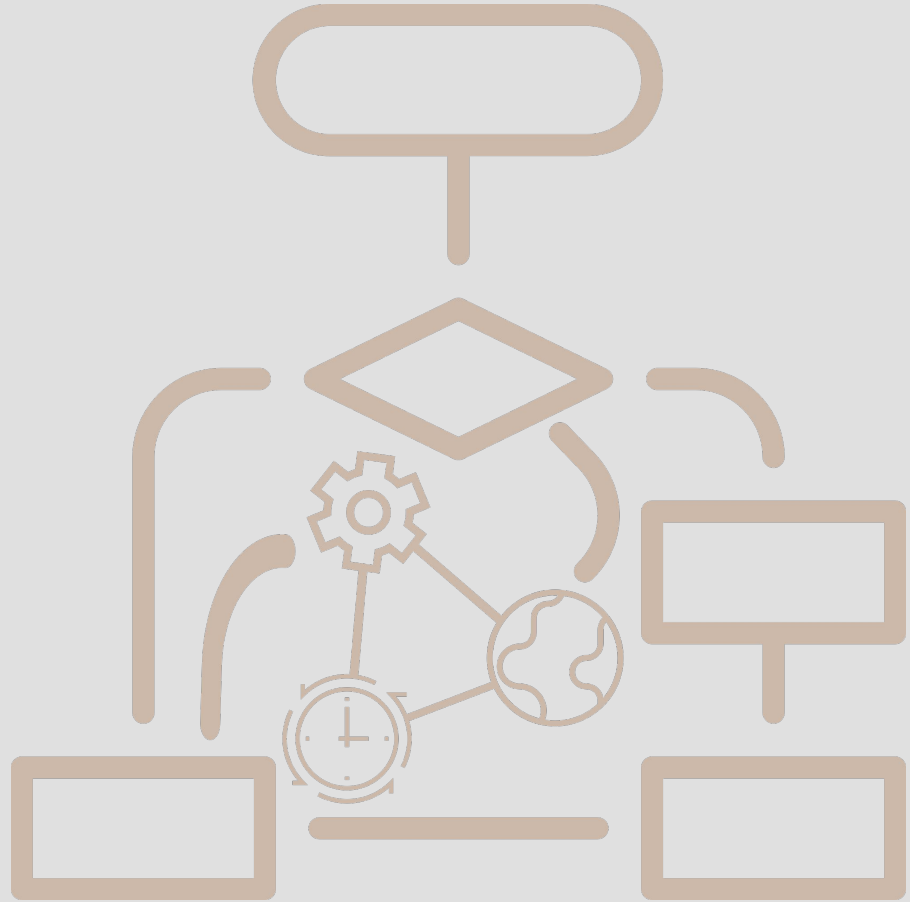
<https://github.com/Research-Squirrel-Engineers/LinkedPipes/blob/master/docs/ontologydraft.ttl>

Linked Pipes Registry

- Pipes should be reusable once defined in Linked Data
- A **Linked Pipe Registry** might help in organising pipes
- Architecture:
 - A registry file in a git repository which links to Pipe RDF files published elsewhere save (possibly Zenodo, etc.)
 - Visualisation of these pipes on demand in JavaScript



Linked Pipes ~ Viewer (beta)



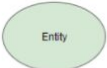


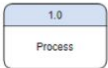












The Elements of DFD

The Elements of DFD

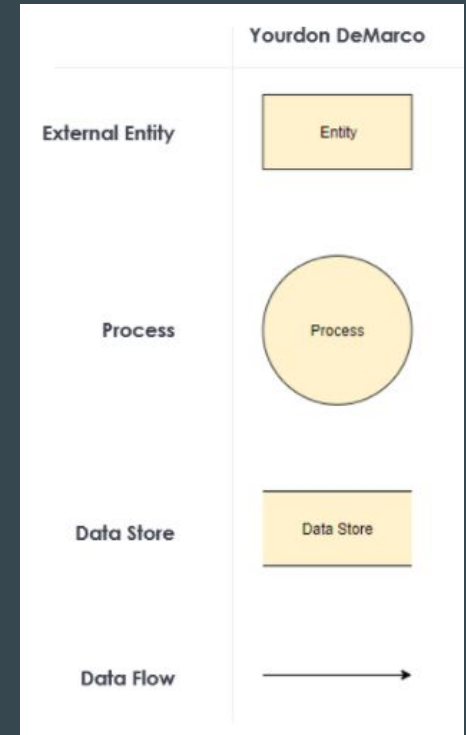
The DFD notation was first described in 1979 by Tom DeMarco as part of Structured Analysis. There are several other widely-used DFD notations which include the following table:

- Yourdon And/Or De Marco,
- Yourdon And Coad,
- Gane & Sarson,
- SSADM(Structured System Analysis And Design Methodology), And

	Yourdon DeMarco	Gane & Sarson	SSADM	Yourdon and Coad
External Entity				
Process				
Data Store				
Data Flow				

The Elements of DFD

- **Processes** are the essential activities, carried out within the system boundary, that use information. A process is represented in the model only where the information which provides the input into the activity is manipulated or transformed in some way so that the data flowing out of the process is changed compared to that which flowed in.
- **Data-flows** represent a package of information flowing between two objects in the data-flow diagram. Data-flows are used to model the flow of information into the system, out of the system, and between elements within the system.
- **Data stores** are a place where data is stored and retrieved within the system.
- **External entities** are entities outside of the system boundary which interact with the system, in that they send information into the system or receive information from it. External entities may be external to the whole organization — as in Customer and Supplier in our running example; or just external to the application area where users' activities are not directly supported by the system under investigation. Accounts and Engineering are shown as external entities as they are recipients of information from the system. Sales also provide input to the system. External entities are often referred to as sources and sinks. All information represented within the system is sourced initially from an external entity. Data can leave the system only via an external entity.



Viewer based on flowchart.js

- <https://flowchart.js.org>
- <https://github.com/adrai/flowchart.js>

flowchart.js

Zeichnet einfache SVG Flussdiagramme aus Text-Representation des Diagrams

Herunterladen minified version Schauen auf GitHub

/// Demo | Versuche mich hier unten zu editieren

```
1 [r->start: Start->http://www.google.com[blank]
2 e->end: http://www.google.com
3 opl->operation: My Operation
4 sub->subroutine: My Subroutine
5 cond->condition: Yes
6 or->no:http://www.google.com
7 io->input/output: catch something...
8 para->parallel: parallel tasks
9
10 st->opt: cond
11 cond(yes)->io->e
12 cond(no)->para
13 para(path1, bottom)->sub(right)->opl
14 para(path2, top)->opl
```

```
graph TD
    Start[Start] --> MyOperation[My Operation]
    MyOperation --> Cond{Yes or No?}
    Cond -- yes --> Catch[/catch something.../]
    Cond -- no --> Para[parallel tasks]
    Para --> MySubroutine[My Subroutine]
    Para --> MyOperation
    Catch --> End[End]
    MySubroutine --> End
```


Viewer based on flowchart.js

Syntax

- Data(-Store) ~blue nodes (*must be a rectangle with two outlines on t, b*)
 - [node_name]=>**subroutine**: [space][node_text]||**data**:>[link]
 - csv=>subroutine: Jules_Vernes_Five_Weeks_in_a_balloon.txt|data:><https://www.gutenberg.org/cache/epub/3526/pg3526-images.html#link2HCH0001>
- Data NOT DIGITAL ~grey nodes (*must be a rectangle with two outlines on t, b*)
 - [node_name]=>**subroutine**: [space][node_text]||**datand**:>[link]
 - claytablet=>subroutine: Clay tablet|datand
- Tool on Wikidata ~purple nodes (*must be a ellipse*)
 - [node_name]=>**inputoutput**: [space][node_text(**WikidataID**)]||**toolwd**:>[link to Wikidata entity]
 - recogito=>inputoutput: Recogito (Q74692524)|toolwd:><https://www.wikidata.org/entity/Q74692524>
- Tool (local) ~yellow nodes (*must be a ellipse*)
 - [node_name]=>**inputoutput**: [space][node_text|**tool**:>[link]
 - qgisprintcomposer=>inputoutput: QGIS 3.18 Print Composer|tool



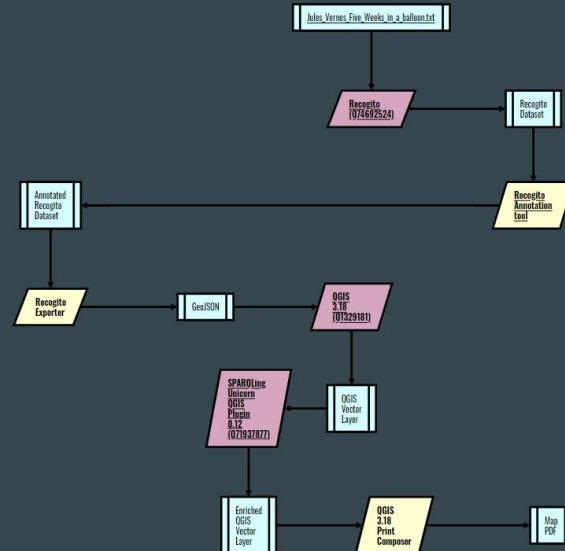
The Viewer @ <http://viewer.linkedpipes.xyz>

Linked Pipes Viewer [based on [flowchart.js](#)]

```
csv=>subroutine: Jules_Vernes_Five_Weeks_in_a_balloon.txt|data:>https://www.gutenberg.org/cache/epub/3526/pg3526-images.html#link2HC#001
recogitods=>subroutine: Recogito Dataset|data
geojson=>subroutine: GeoJSON|data
ogislayer=>subroutine: QGIS Vector Layer|data
ogismap=>subroutine: Map PDF|data
ogislayerenriched=>subroutine: Enriched QGIS Vector Layer|data
annotated=>recogitods=>subroutine: Annotated Recogito Dataset|data
recogito=>inputoutput: Recogito (Q74692524)|toolid:>https://www.wikidata.org/entity/Q74692524
recogitoannotator=>inputoutput: Recogito Annotation tool|tool:>https://github.com/recogito/recogito-js
recogitoexporter=>inputoutput: Recogito Exporter tool
```

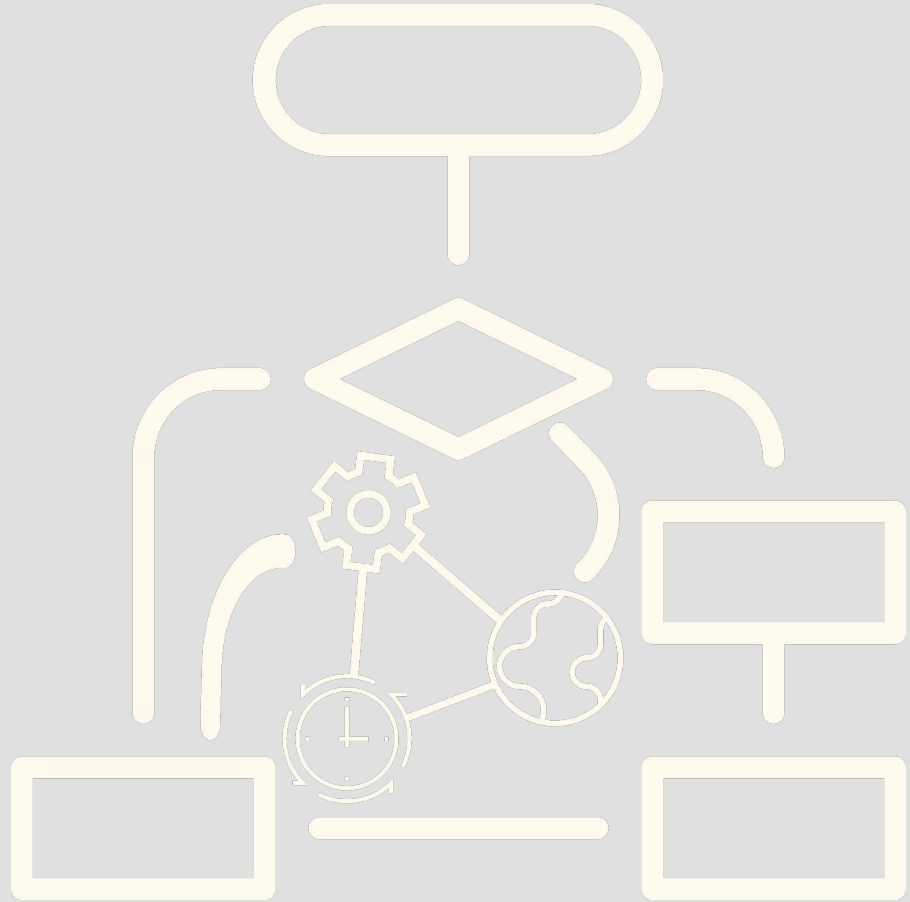
Select example Jules Verne Example

Run | Download graphic as SVG



Linked Pipes

~ Recogito



Example: Text -> Recogito Geo Annotation -> QGIS Map

witale
Joined on 10 Sep 2016

5 weeks 1.txt

Jules Verne: Five Weeks in a Balloon (part 01)

1867 Annotationen · No Other Contributors

ANNOTATIONSMODUS: NORMAL SCHNELLAUSWAHL · RELATIONS FARBE: NACH TYP NACH STATUS NACH TAG

CHAPTER FIRST.

The End of a much-applauded Speech.—The Presentation of [Dr. Samuel Ferguson](#)—Excelsior.—Full-length Portrait of the Doctor—A Fatalist convinced.—A Dinner at the Travellers' Club.—Several Toasts for the Occasion.

There was a large audience assembled on the 14th of January, 1862, at the session of the Royal Geographical Society, No. 3 Waterloo Place, London.

The president, [Sir Francis M.](#)—, made an important communication to his colleagues, in an address that was frequently interrupted by applause. This rare specimen of eloquence terminated with the following sonorous phrases bubbling over with patriotism:

"England has always marched at the head of nations" (for, the reader will observe, the nations always march at the head of each other), "by the intrepidity of her explorers in the line of geographical discovery." (General assent). "[Dr. Samuel Ferguson](#), one of her most glorious sons, will not reflect discredit on his origin." ("No, indeed!" from all parts of the hall.)

"This att

London
geonames:2643743
Londres, Londra, लंदन, Λονδίνο, ロンドン

archaeoklamt 4 years ago

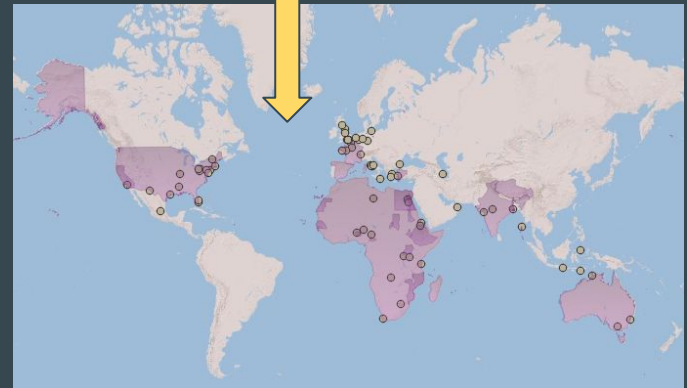
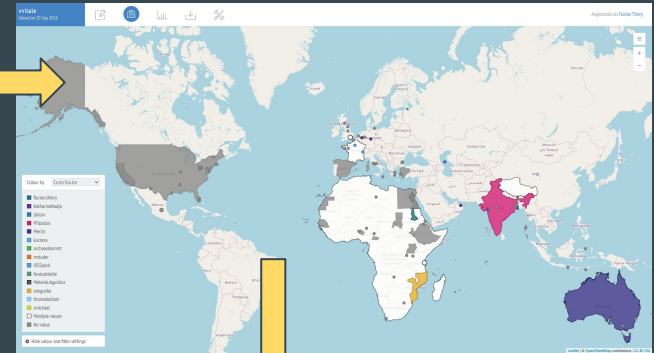
Problem, geonames do not suit to the 19th century.
archaeoklamt 4 years ago

Write a reply...

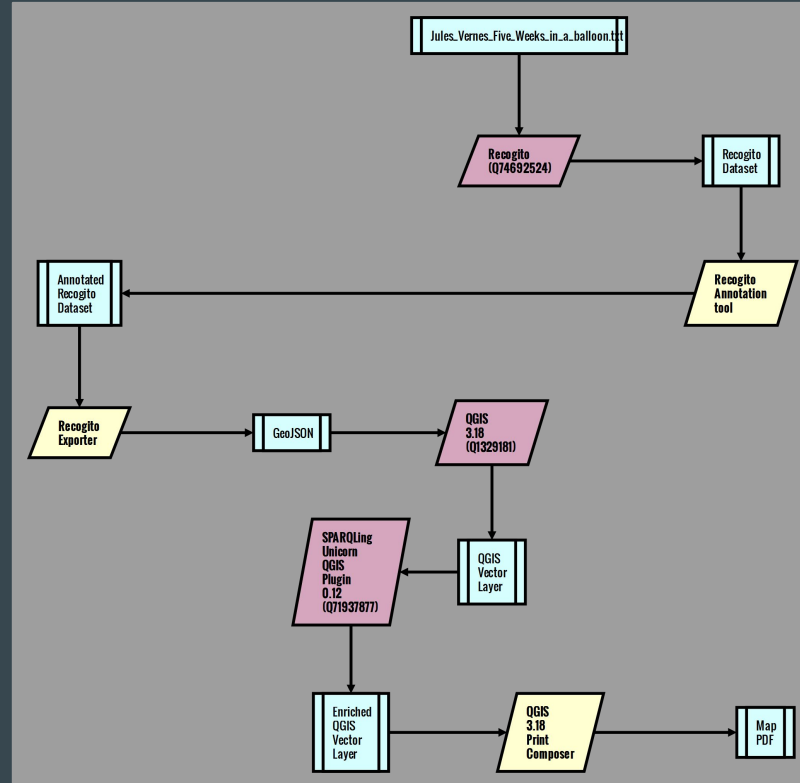
Tag...

Abbrechen OK & Weiter OK

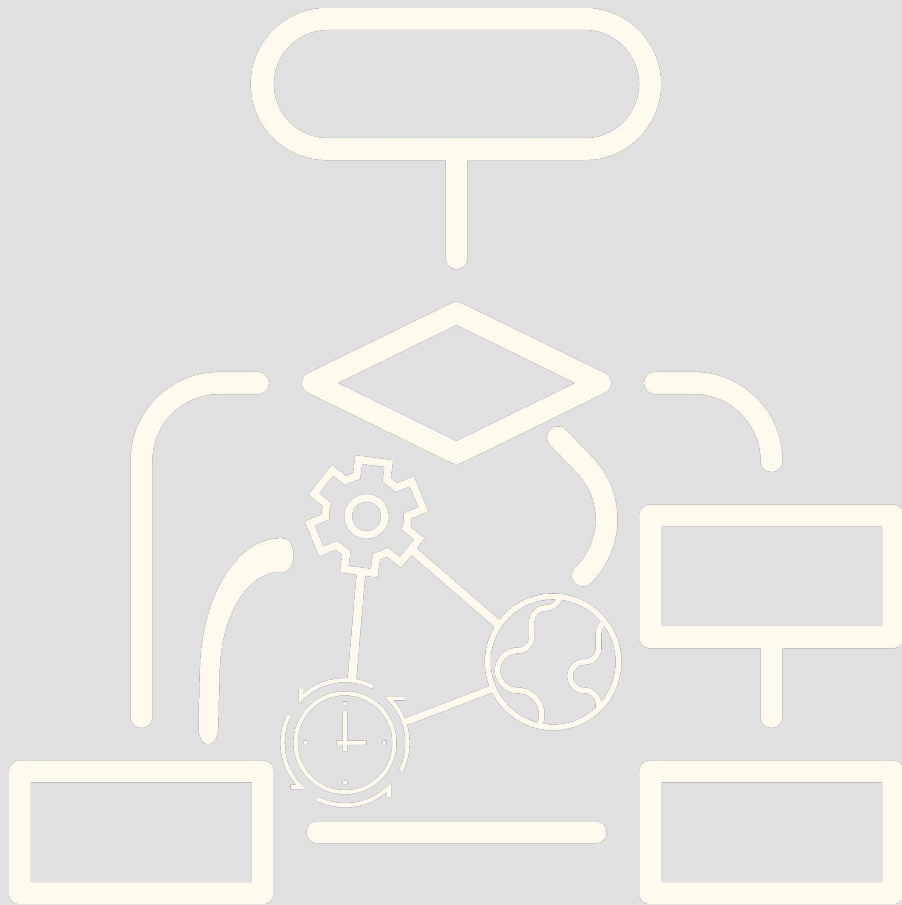
Society of London had yet achieved.



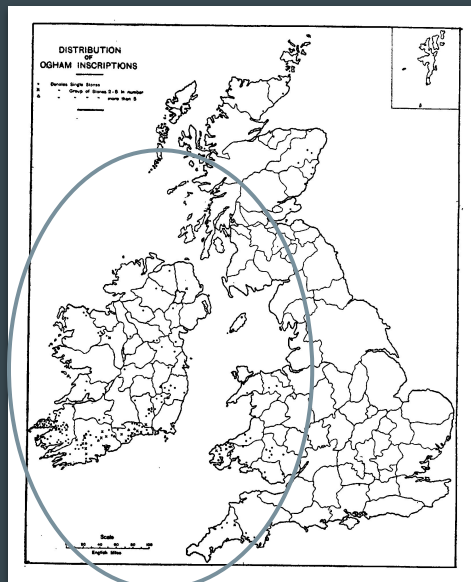
Example: Text -> Recogito Geo Annotation -> QGIS Map



Linked Pipes ~ Ogham



The Ogi Ogham Project - share Linked Open Ogham Data



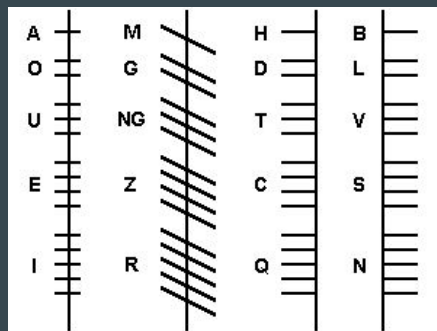
R.A.S. Macalister, *Corpus inscriptionum insularum Celticarum*, vol. I (1945) / p.502

4th-6th century AD

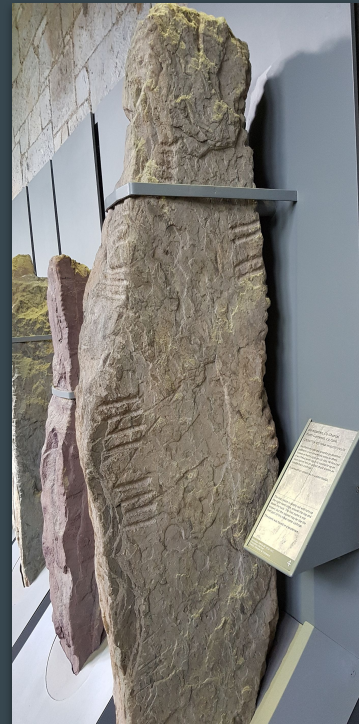
Distribution

Ireland

(+ Wales, England, Isle of Man)

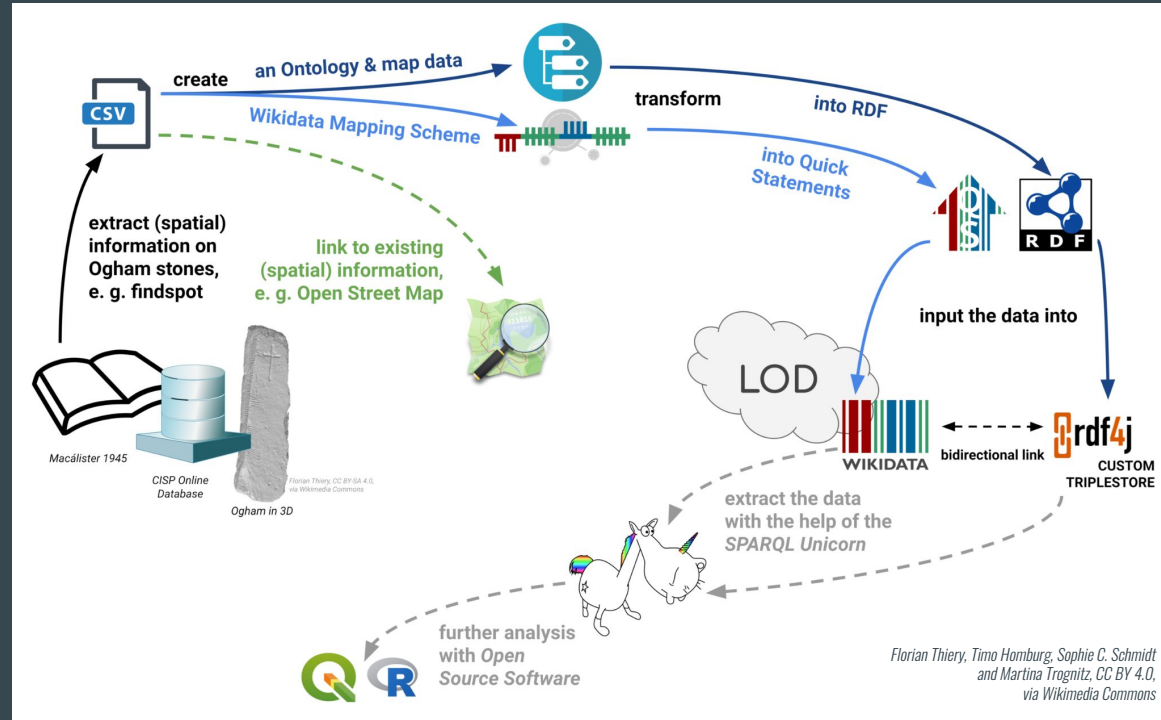


Al-qamar / CC BY-SA 3.0 via Wikimedia Commons

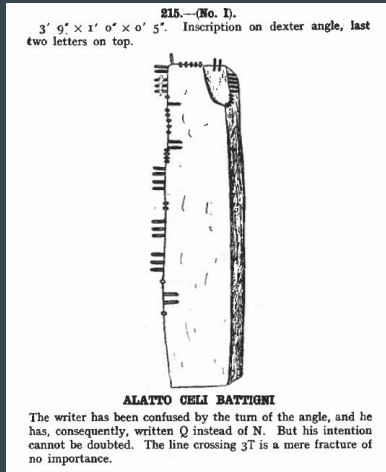


UCS Stone Borrider, Stone 4, C1C 81 (Roman Theory) CC BY 4.0

Linked Ogham Workflow

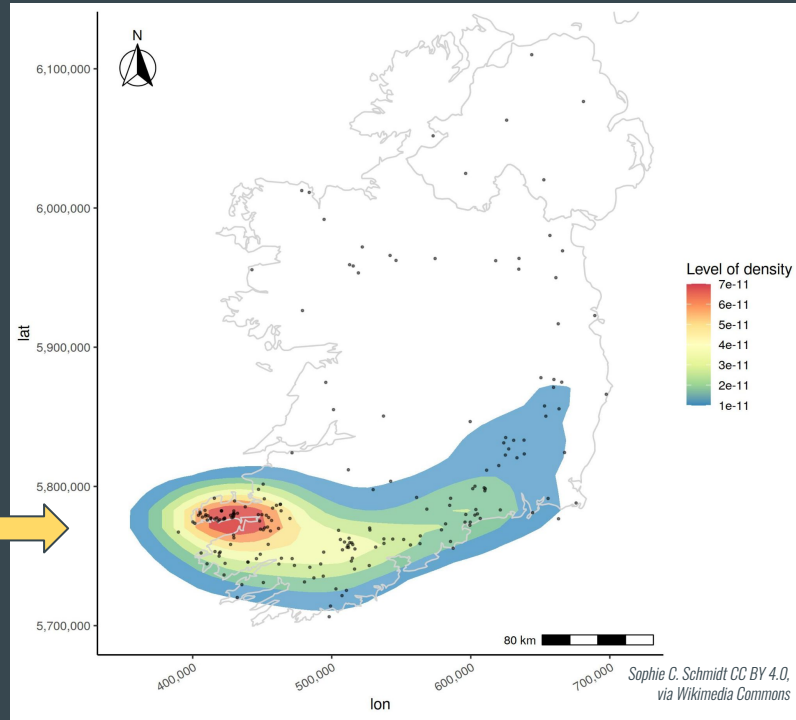
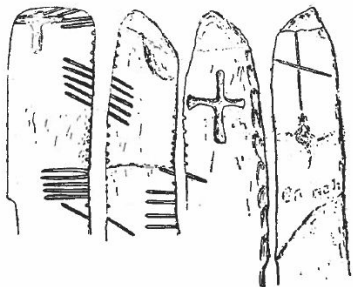
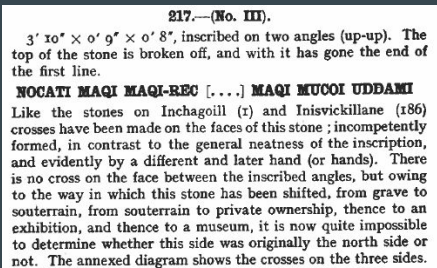


Example: Ogham CIIC Book Data to R based Density Map

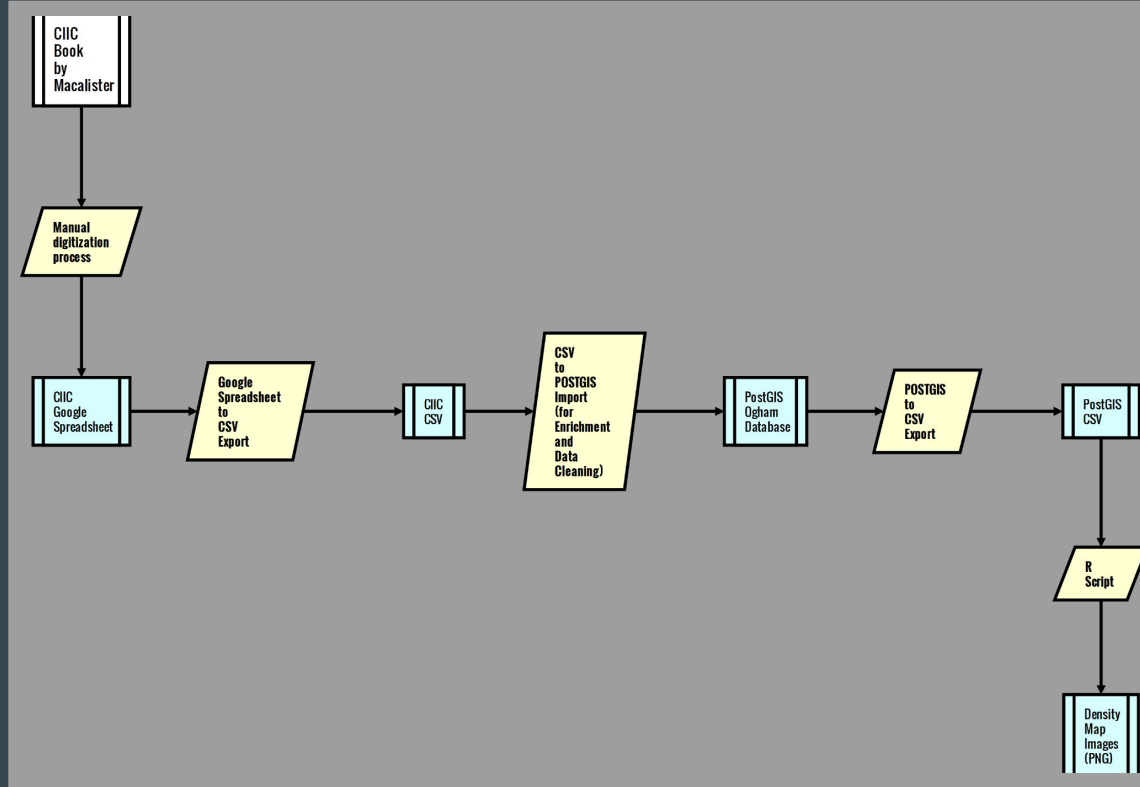


Macálistar 1945, p. 209

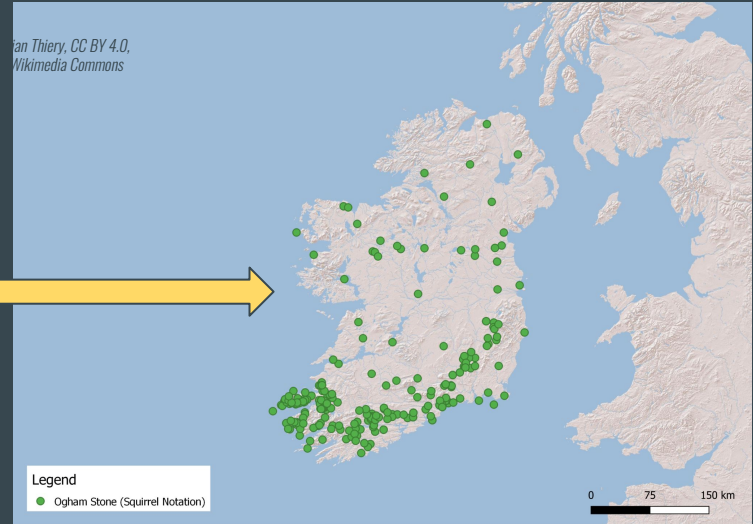
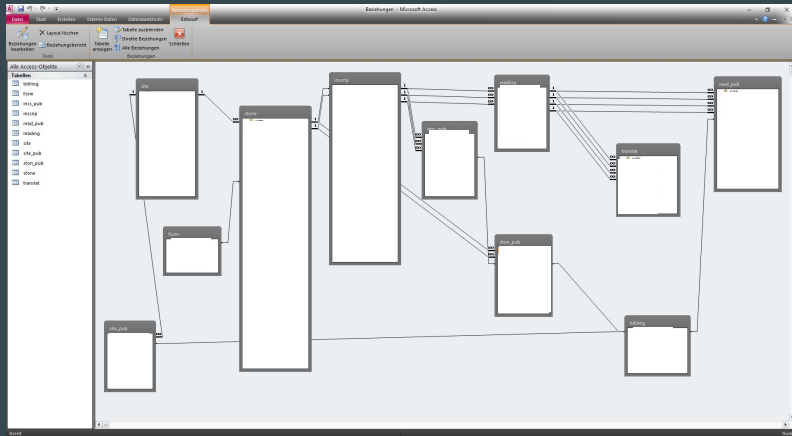
Macálistar 1945, p. 211



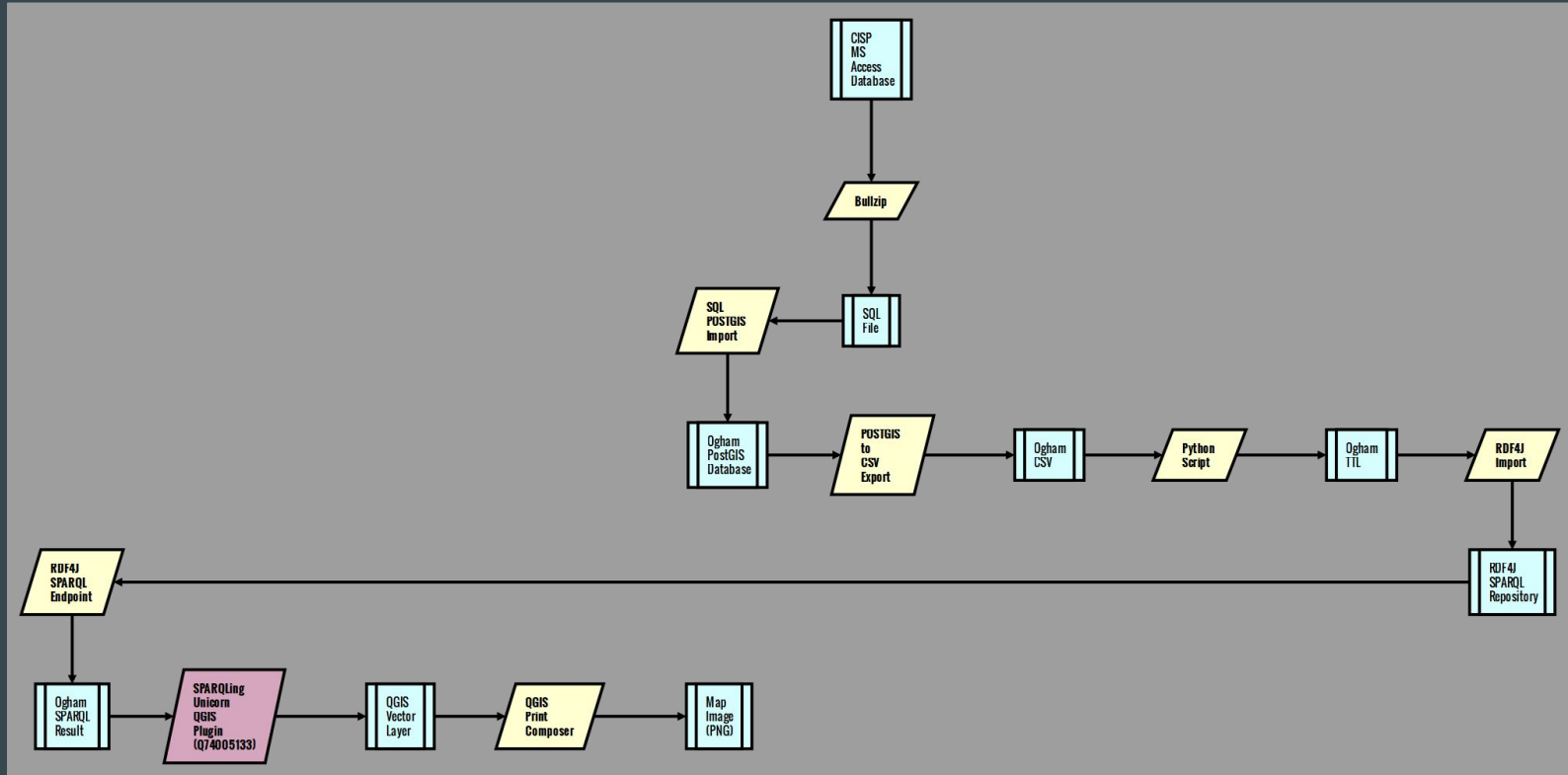
Example: Ogham CIIC Book Data to R based Density Map



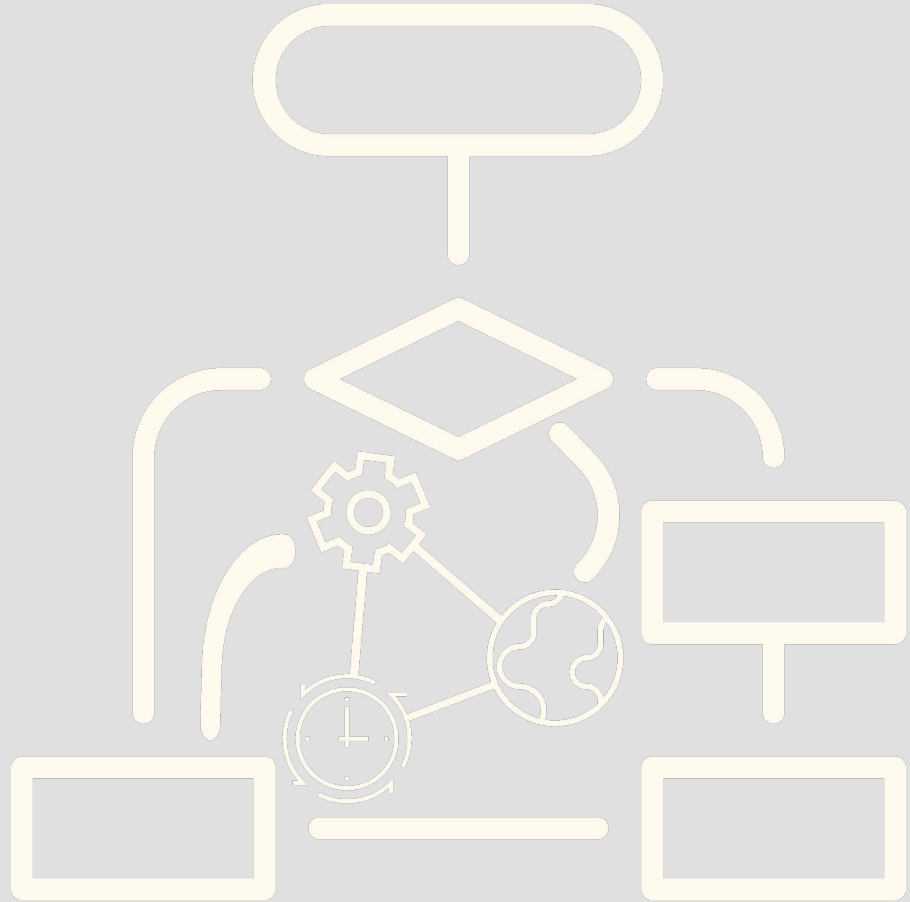
Example: Ogham CISP Data to QGIS Map



Example: Ogham CISP Data to QGIS Map



Linked Pipes ~ Taming Time



Example: Dating Mechanisms → Alligator + AMT

The temporal reasoning for getting conclusions can be done using the Role-Chain-Axioms within the Academic Meta Tool.

	b	m	o	f	i	d	s	e	s	d	f	o	m	a	q
m															
o															
f															
i															
d															
s															
e															
s															
d															
f															
o															
m															
a															
q															

based on <http://academic-meta-tool.kyoontology.com/RoleChainAxiom>

based on Freksa (1992), Figure 6

<https://youtu.be/Yka1HpuOg5M>

Alligator + AMT

A Linked Pipe for taming relative chronology

Archaeological Background

In archaeology, there is a lack of LOD levels and Linked Pipes for modeling, storing and reasoning of historic chronologies. Usually, chronologies are being modeled by using correspondence analysis (CA) because this method is enhanced by its own Linked Pipe which makes it more flexible with other logic formalisms like RDF graphs. Alligator and the Academic Meta Tool (AMT) are two like friends which is combination allow for interdisciplinary research chronologies according to Allen's interval algebra in LOD.

To start with, data are exported from a database in order to use them for a correspondence analysis. The order of the occurrence within a known chronology needs normally a descriptive Linked Pipe diagram from left to right. In fact, the so called horizontal graphs. In our case, the occurrence of events (events related and types in detail and undetailed Linked pipes) are also ordered chronologically from left to right but the relative position of nodes and the undetailed Linked pipes to other Linked pipes makes it more challenging to create them within the general chronological order. As a result, the CA diagram factor (degree CA) is considered an intermediate step. Alligator allows to create the intermediate step (distance between dated and undated types Linked pipes).

Let us create a Linked Pipe!

Alligator is developed of the Warwick Developmental Zentrationism (WDCM) II. It is a web site for transforming CA correspondence analysis (CA) into time and location time intervals into a relative chronology and location time intervals. Alligator is a web site for transforming CA correspondence analysis (CA) into time and location time intervals into a relative chronology and location time intervals. Alligator is a web site for transforming CA correspondence analysis (CA) into time and location time intervals into a relative chronology and location time intervals.

AMT is developed in combination with the Linked Pipe diagram. The CA diagram and the Linked Pipe diagram for creating can be used together and provides a standard framework for modeling chronologies in graphs, including a response reasoning using different logic. Currently, there are two logic formalisms: the first is based on the CA diagram and the second is based on the Linked Pipe diagram and the AMT. Reasoned chronologies can be visualized.

ALLIGATOR

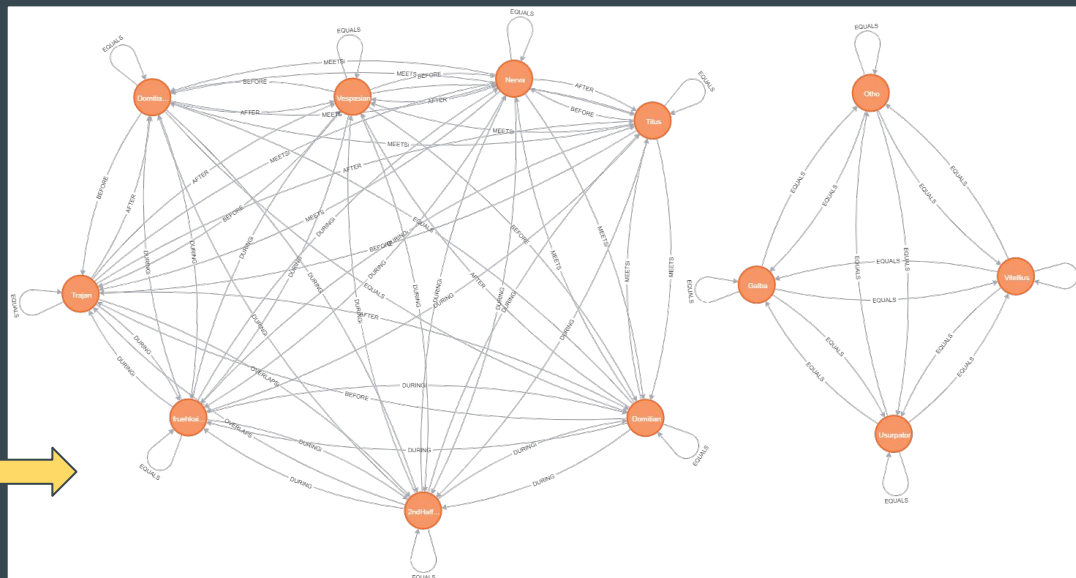
ACADEMIC META TOOL

Freksa, Thier, & Sc...
Dr. Edward M. FSA

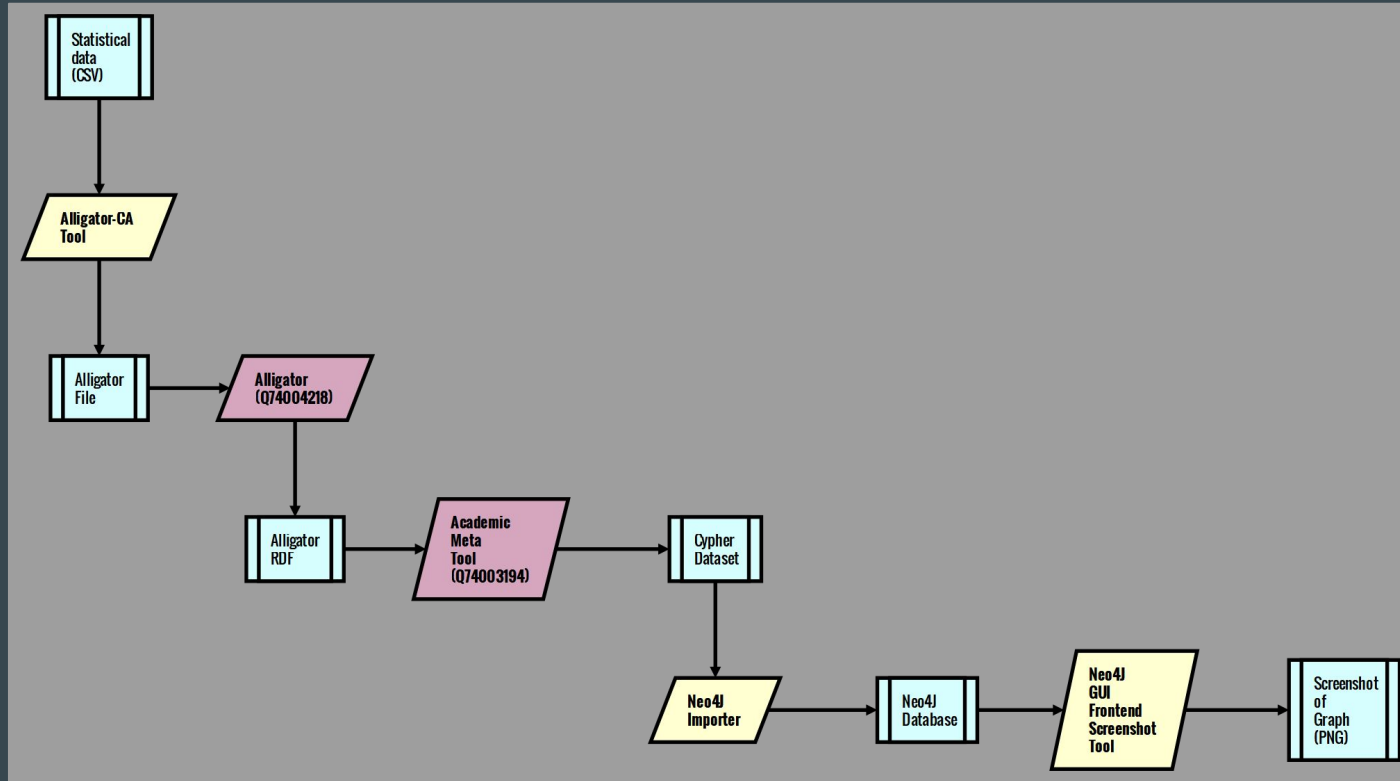
<https://doi.org/10.5281/zenodo.3567911>

Example: Statistical Data to AMT modelled CYPHER

1	fruehkaiserzeitlich	Vitellius	1
2	fruehkaiserzeitlich	Galba	1
3	fruehkaiserzeitlich	Otho	1
4	fruehkaiserzeitlich	Vespasian	10
5	fruehkaiserzeitlich	Titus	2
6	fruehkaiserzeitlich	Domitian	15
7	fruehkaiserzeitlich	Nerva	2
8	fruehkaiserzeitlich	Trajan	19
9	2ndHalfFirstCentury	Vitellius	1
10	2ndHalfFirstCentury	Galba	1
11	2ndHalfFirstCentury	Otho	1
12	2ndHalfFirstCentury	Vespasian	10
13	2ndHalfFirstCentury	Titus	2
14	2ndHalfFirstCentury	Domitian	15
15	2ndHalfFirstCentury	Nerva	2
16	2ndHalfFirstCentury	Trajan	2
17	Usurpator	Galba	1
18	Usurpator	Otho	1
19	Usurpator	Vitellius	1
20	Usurpator	Vespasian	1
21	DomitianConsulate2	Domitian	1

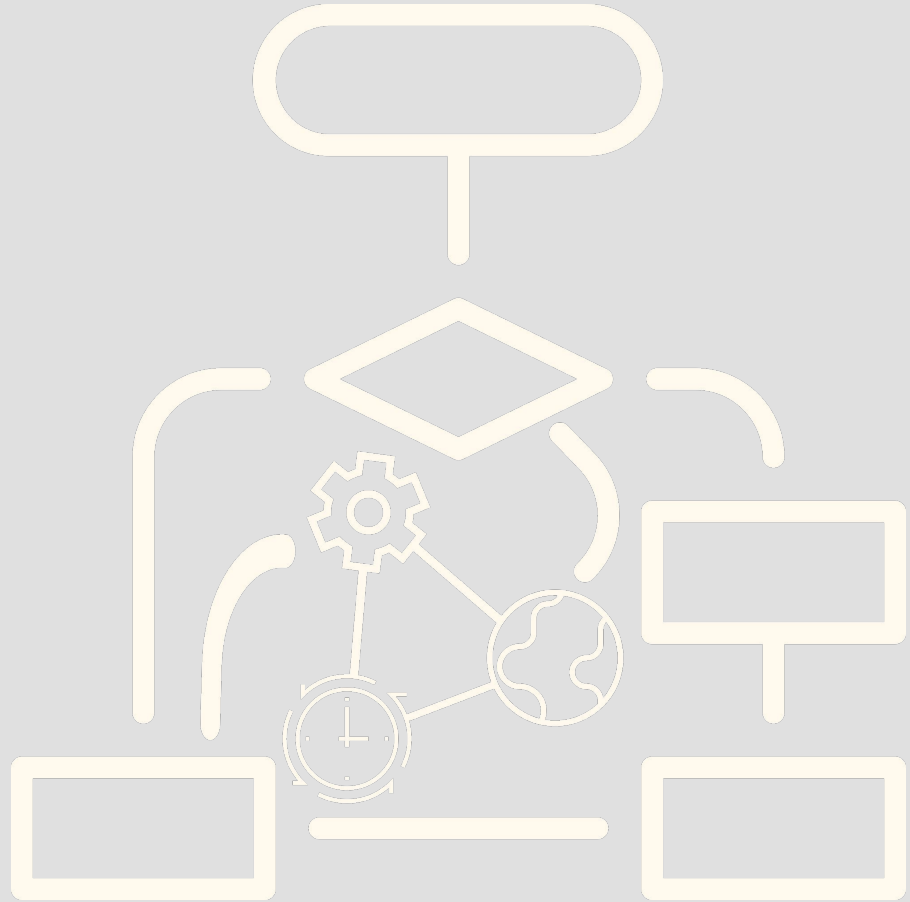


Example: Statistical Data to AMT modelled CYPHTER

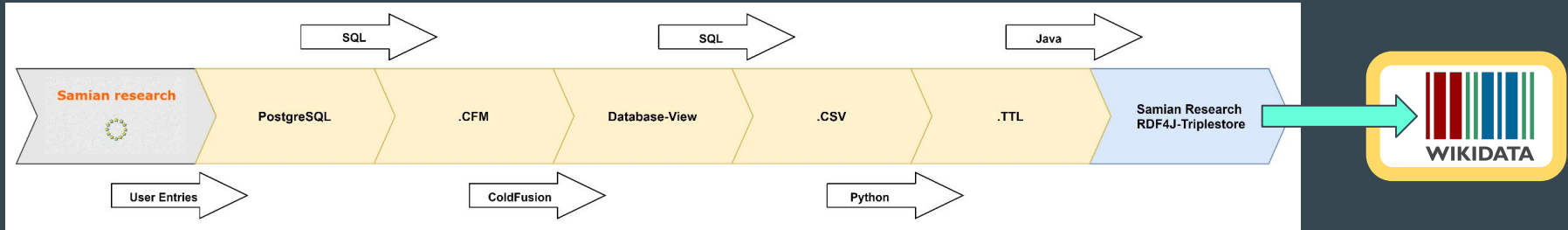


Linked Pipes

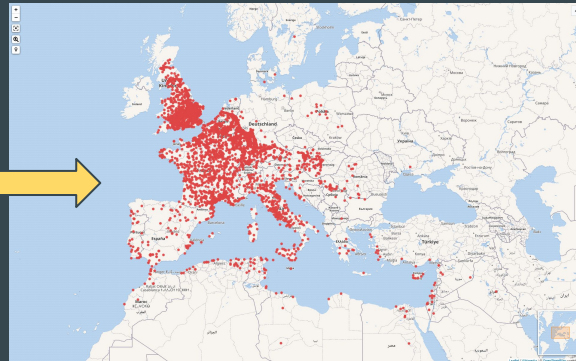
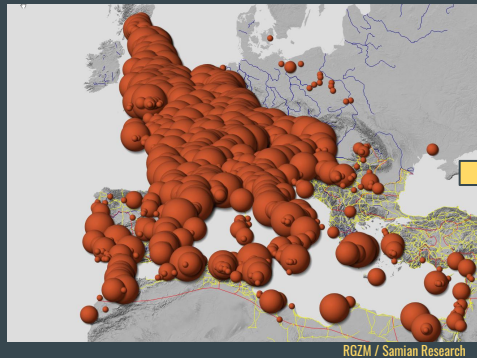
~ Linked Open
Samian Ware



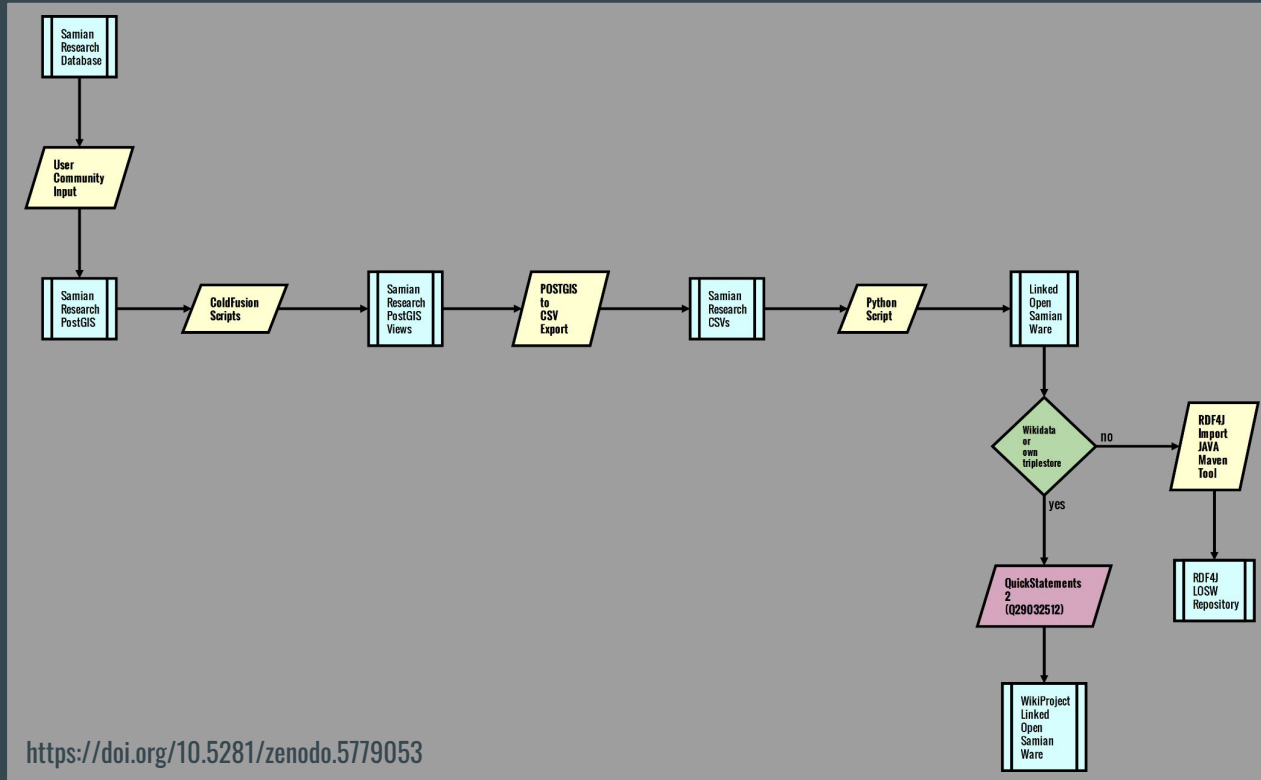
Example: Samian Research to Samian Ware in Wikidata



<https://rgzm.github.io/samian-lod/doc/#transformation-workflow>



Example: Samian Research to Samian Ware in Wikidata

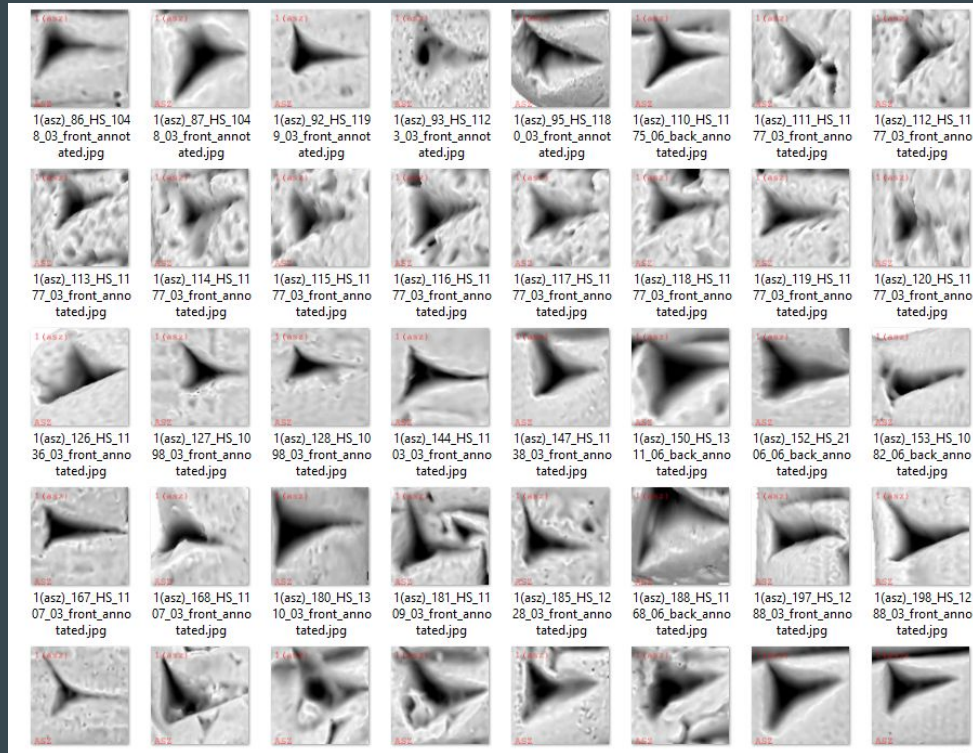
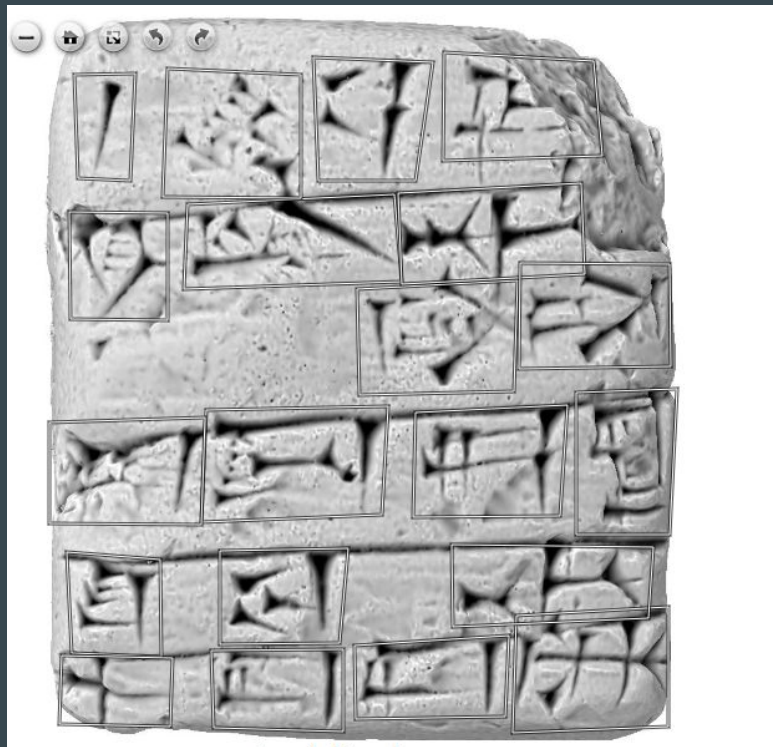


Linked Pipes

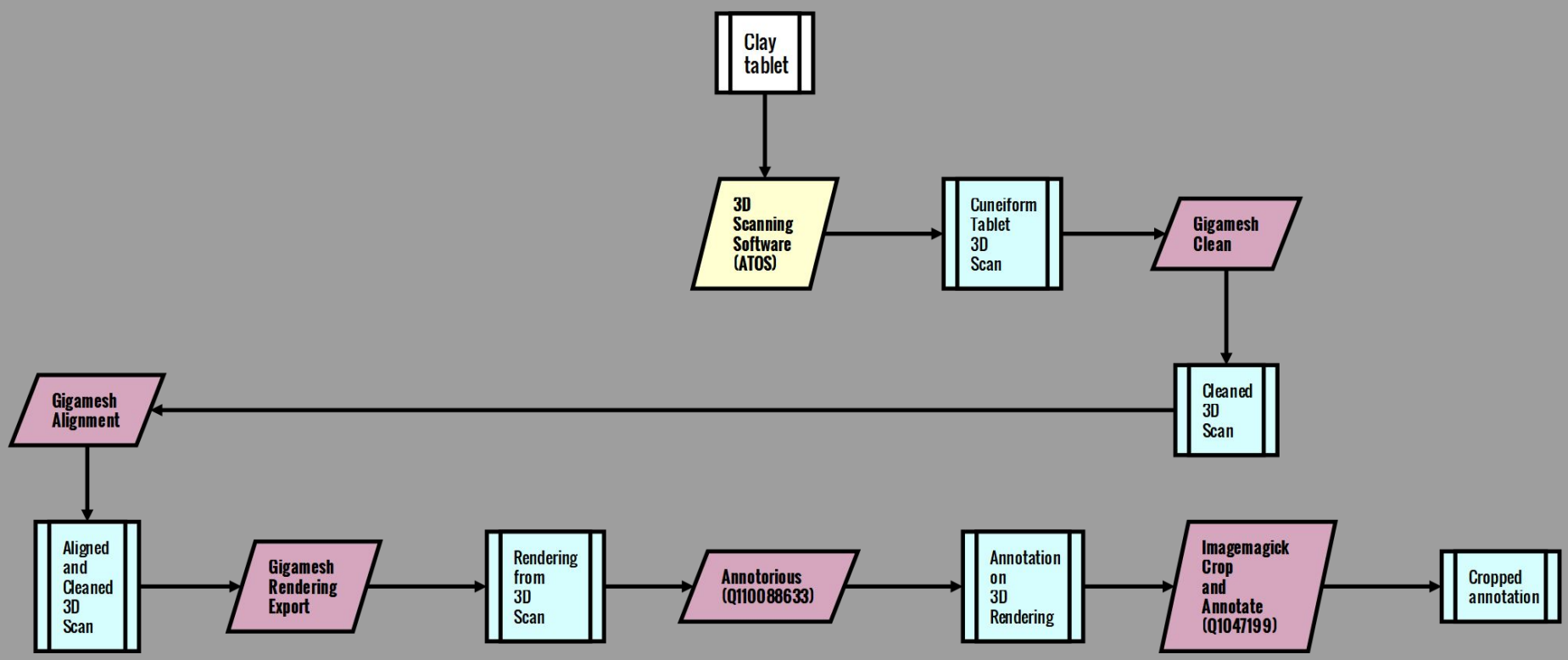
~ cuneiform script



From 3D Scan to Machine Learning Data

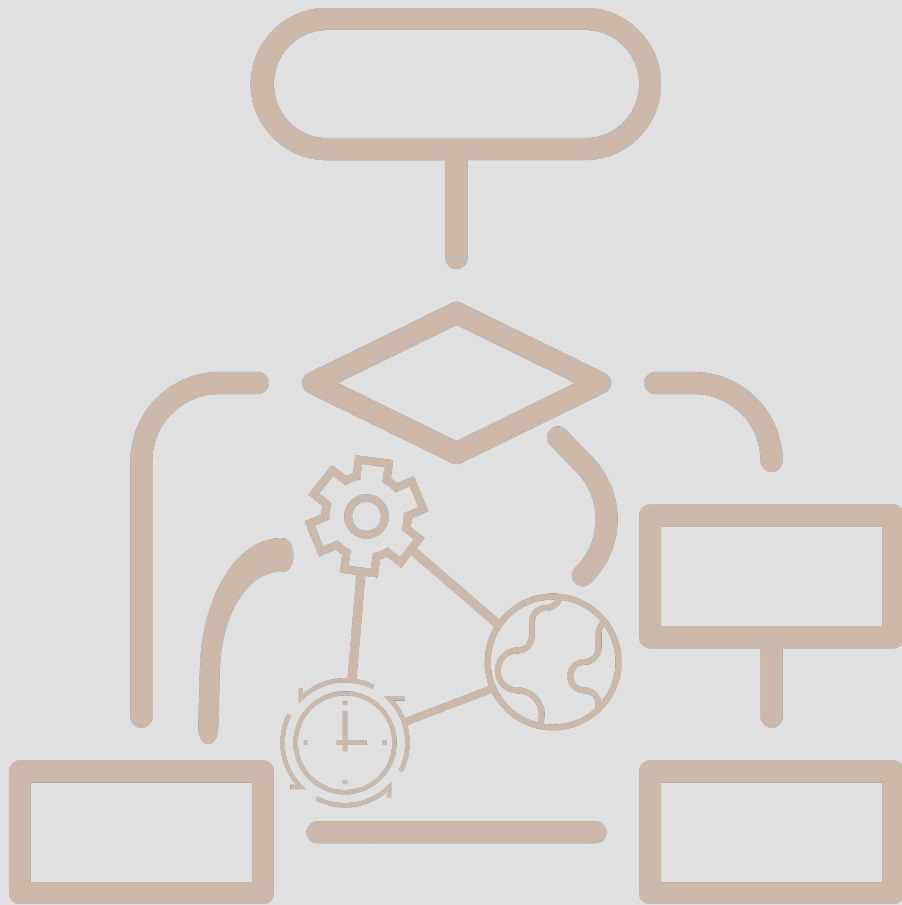


From 3D Scan to Machine Learning Data II



Linked Pipes

~ TO DOs



Tasks

- Which attributes to attach to a pipe element?
 - Definition of the elements of a pipe element
 - Relation to other Linked Data vocabularies describing software and data flows
- Implementation Tasks
 - Implementation of a Linked Pipe Viewer
 - <https://github.com/Research-Squirrel-Engineers/LinkedPipes/tree/master/docs>
- Working Paper
 - <https://hackmd.io/LUPyJBmmSAaHOYKK3qsuIlg?both>
- Plan of upcoming activities
 - Other Session at CAA Oxford with SIG Data-Dragon and SIG SSLA?

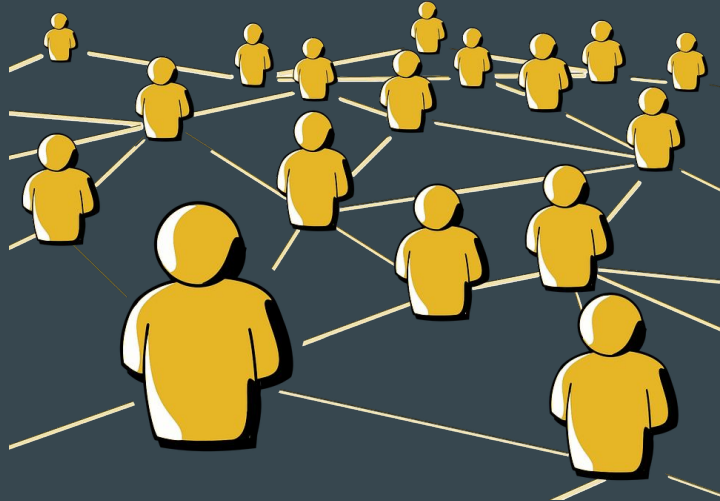
Workshop Program: Today

- Discussion
 - <https://hackmd.io/sftNd0U4Q4qmTHkOdh3ZdQ?both>
- Next Steps
- Working Groups
 - Frontend/Backend-Development
 - Ontology-Design
 - Wikidata Tool Entries: **Add your Tool!**
 - Case Studies: **Create your Linked Pipe!**
 - LP-Registry: **Enter your Linked Pipe!**
 - <https://github.com/Research-Squirrel-Engineers/LinkedPipes/blob/master/LinkedPipesRegistry.ttl>
 - Drafting Working Paper
 - <https://hackmd.io/LUPyJBmmSAaHOYKK3qsuIg?both>



Workshop Program: Monday 20th Dec 2021

- reporting of the Working Groups and discussing
- final remarks
- next steps to Linked Pasts 8



Thx!

Any Questions?

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