

# **A Techie's Guide to the Ordinary & Armorial**

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# This Class: A Techie's Guide to the Ordinary & Armorial

Nearly every book herald comes into contact with the Society's O&A system, but only a few go behind the curtains to see how it works.

In the next hour we will make a brief overview of the following:

- Purpose of the armorial database
- Brief history of how it came to exist
- The delimited-text data files
- Software behind the O&A website
- Search-engine criteria and scoring
- Structure of the ordinary
- The use of regular expressions
- Database update procedures
- Other ways to access this data
- Possible future enhancements

The class assumes basic familiarity with book heraldry and computer technology.

We'll be talking about computer systems, but it's at a high level, and you do not need to be a programmer or database expert to understand the material.

## About Me: Mathghamhain Ua Ruadháin



- In modern life, I've spent the last thirty years as a professional software developer specializing in web applications.
- I've been active in the SCA for about seven years.
- The process of researching my name and device got me hooked on book heraldry, and led to projects like the Traceable Heraldic Art collection.
- I'm the emergency deputy for the Morsulus Herald, who manages the O&A.

## Historical Armorial and Ordinaries

Outside of the Society, an armorial (also “roll of arms”, “register”) is a catalog of armigers: a listing of those entitled to bear arms.

- May be illustrated (emblazoned) or textual (blazons).
- May be “general” or focused on a specific occasion, location, or institution.
- May be organized by rank/precedence, by name, by location, or by design.

An ordinary is a specialized armorial, organized by the primary charge or other design elements, primarily used when you have an illustration or description of armory and want to know who it belongs to.

## What is the SCA Ordinary & Armorial?

The SCA's Ordinary and Armorial (often abbreviated to “the O&A”) is the Society's database of heraldic registrations.

It contains the all of the names and armory (devices and badges) that have been registered by the College of Arms for individuals, branches, households, guilds, and the Society itself.

It also contains some less-common types of records, including regalia, heraldic titles, and seals.

Unlike a typical armorial, it also includes listings of names for people who don't have any “rank” or arms — because the SCA allows registration of names and devices even if you haven't received any awards.

## Morsulus Herald: Responsible for the O&A

Morsulus Herald serves as a deputy to Laurel, responsible for maintaining and updating the O&A.

The name comes from Latin and means “a small bite” — or, we might say, “byte.”

The position was created in June of 1979 by Karina as her last official act, and awarded to Hal Ravn retroactively effective back to 1976 when he completed the first armorial database and used it to create the first printed ordinary.

Over the course of fifty years, there have been five Morsulus Heralds, and two other heralds who had the same responsibility under a different title.

Master Herveus d'Ormonde has served as Morsulus for more than two decades, since April 2000.

## Timeline Leading Up To The Electronic Armorial

Registration of Society arms only began in AS IV, but the numbers grew quickly.

It became clear that mechanisms would be needed to keep track of registrations, including monthly letters, index cards, files by name, and periodic armorials.

By the time the first armorial was published three years later it had over 500 items.

- ◆ May 1966: First Tournament
  - ◆ Feb 1970: First heraldic registrations occur at a meeting of the College of Heralds in the West
  - ◆ Dec 1970: First decision letters published to note new registrations and returns
  - ◆ Sep 1971: Acceptances are formatted to be cut and pasted onto index cards for filing
  - ◆ Jan 1973: First armorial published as seventeen typewritten pages



## Development Timeline for First Electronic Armorial

Efforts to move the records to an electronic format began that year, but proceeded in fits and starts, because only a few people had the requisite technical skills, and the needed computer equipment was only found at large businesses or universities.

“I’m afraid that a lot of the early Society record keeping was, basically, stolen resources from various people’s employers...” — Hal Ravn

It took three more years for the first computerized armorial to be published, along with the first ordinary.

- ◆ Nov 1973: Work underway to create computerized armory data file
  - ◆ Dec 1975: Second phase of work on computerized armory data file
  - ◆ May 1976: Computer data used to generate second armorial, first ordinary

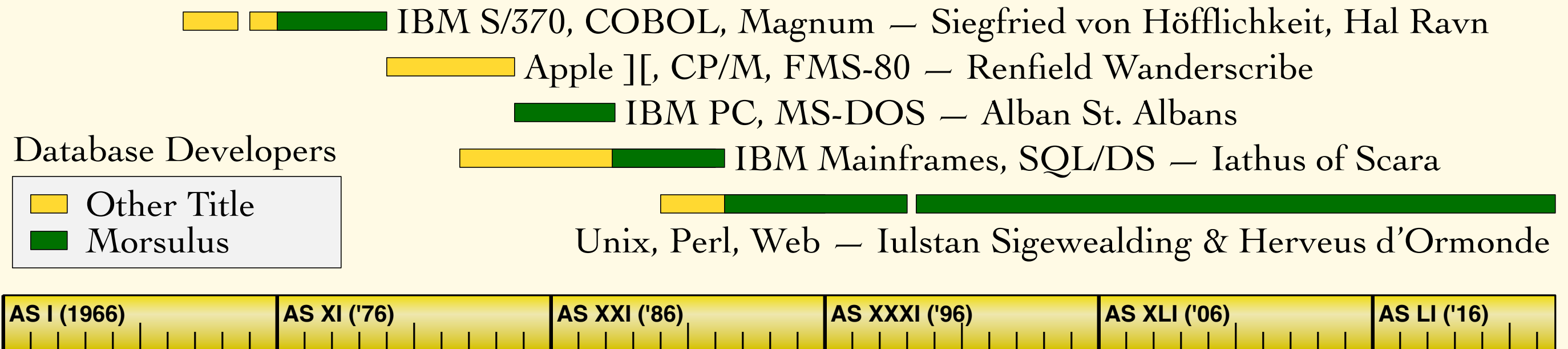




# Timeline of Technology Platforms & Morsulus Heralds

The technology platform used for the database has changed numerous times.

These changes generally align with transitions between heralds responsible for the O&A, as a new person takes over and uses the hardware and software they have available and with which they are familiar.



## Scale of the Ordinary & Armorial Database

The O&A database currently includes just over 132,000 records.

- Around 61,000 unique names.
- Around 64,000 unique pieces of armory.

Some records register both a name and a piece of armory in a combined entry; in other cases those are represented as two separate records.

Remaining additional records include:

- Cross-references for badges jointly owned by two people.
- Old entries that were later modified or re-blazoned.
- Items registered with spelling mistakes and later corrected.

(Counts as of the December 2022 update, including the October 2022 LoAR.)

## Pace of Changes to the Database

The database is generally updated on a monthly cycle, driven by LoARs.

Around 250–300 new records are added in a typical month.

- There's some seasonal variation and blips from month to month.
- Overall pace has held roughly steady in that ballpark for decades.
- This has dropped to around 200 per month during the Covid era.

Changes to existing records are similar in scale, but less steady.

- Releases of names/devices that are no longer in use.
- Reblazons when our practices change or an error is reported.
- Changes to the way armory descriptions are encoded.
- Corrections and clarifying notes.

## The Published O&A Database: oanda.db

The database is published every month as a file named oanda.db, now around 18 MB.

It's plain text, with 132,000 lines, each containing one record, such as this:

```
East, Kingdom of the|201101E|b|(Fieldless) A tyger passant azure. |(For the populace)  
(regid:30165)|MONSTER-TYGER:1:azure:passant to dexter:spa|N0
```

Each line contains data fields separated by “|” characters (“pipe” or “vertical bar”):

- Primary name of the record, or who it is “owned by” or associated with.
- The year, month, and kingdom in which it was registered (and same for releases).
- A record-type code, typically one or two letters — in this case, “b” for badge.
- Other data, varies by type: blazons for armory, secondary names, cross-references.
- Notes, each one in parentheses.
- For current armory, one or more armory description codes.

# Armory Description Codes

Each active armory registration is accompanied by armory description codes:

```
Society for Creative Anachronism|197301L|d|Or, a Laurel wreath vert. |(regid:85911)|  
FIELD:or|LW:1:not surrounding:spa:vert|OR
```

Each description includes a heading (in capital letters), and depending on the heading may also include features (in lower case) separated by colons.

The heading marks a major feature of the armory (functioning as nouns), while the features refine it (like adjectives).

Descriptions are hand-coded by Morsulus when items are added to the database.

To understand the description codes we need to look at the my.cat categories file.

## Armory Indexing Metadata: my.cat

Alongside the database is a much smaller file named my.cat, around 120 KB, which defines the structure of categories and features used for armory indexing.

This file is also delimited plain text, around 3,500 lines, with three types of lines:

- Heading lines define an indexing category, with name and code (~450 lines):

```
beast, bear | BEAST-BEAR
```

- Cross-reference lines link alias or see-also categories to the headings (~2,850):

```
koala - see beast, bear
```

- Feature lines define an indexing attribute and link to related attributes (~350):

```
|tincture:gules<dark
```

## Da'ud Notation

Nowadays, the question of how to store accented letters and other “unusual” characters is simple — just encode everything in UTF-8. But the O&A data file pre-dates Unicode!

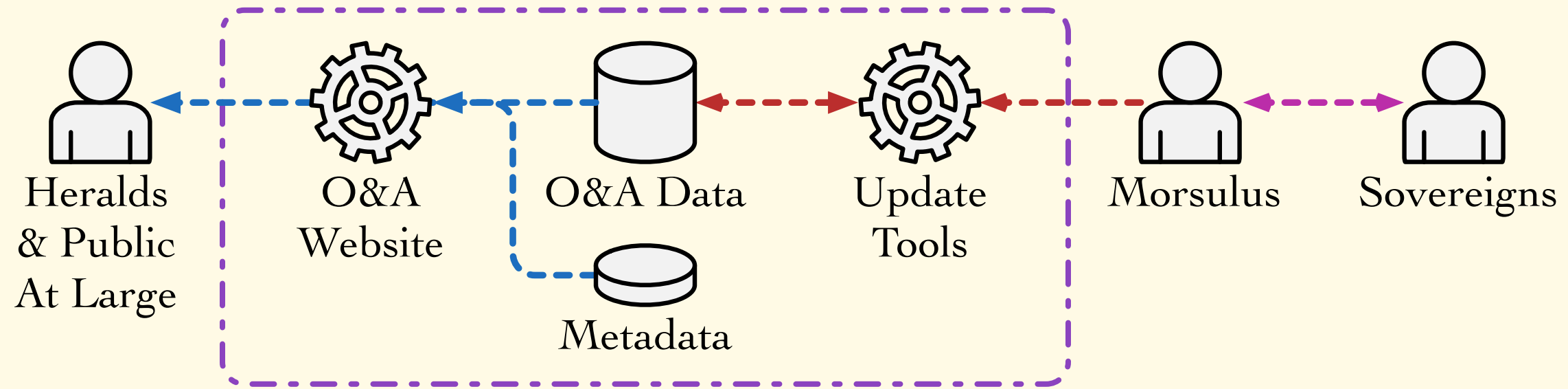
In fact, the first version of the O&A data file was stored in EBCDIC, a seven-bit encoding developed for use with punched cards.

In the 1980s it moved to ASCII, but it still lacked accents — only the “base characters” were stored in the database, and to see the version with the accents you’d have to go look at the LoARs, which had the accents written in by hand over the typewritten letters.

By the mid 1990s it had moved to Latin-1, which supports some accented characters, and adopted a notation for writing the others, called Da’ud Notation, after the Laurel of that period.

For example, A with a breve mark, Ā, is stored as {Au}, and z with the circumflex accent, â, is stored as {z^}. A “simple” version is stored with characters converted to their base letters, and is generally used for most searches, but “narrow” searches allows you to match accents.

## O&A Software Is Used to Access and Update Data



References to the O&A typically include both the data and the associated software.

- The data includes both O&A records and “metadata” describing their structure.
- The search software makes that data visible to the public through a website.
- Back-end tools that are used by Morsulus to update the records based on each month's decisions by the Sovereigns, and to make ongoing fixes and improvements.
- Decades ago, the O&A included code to publish a print version, and later a PDF file, but that practice stopped because nearly everyone just uses the website.



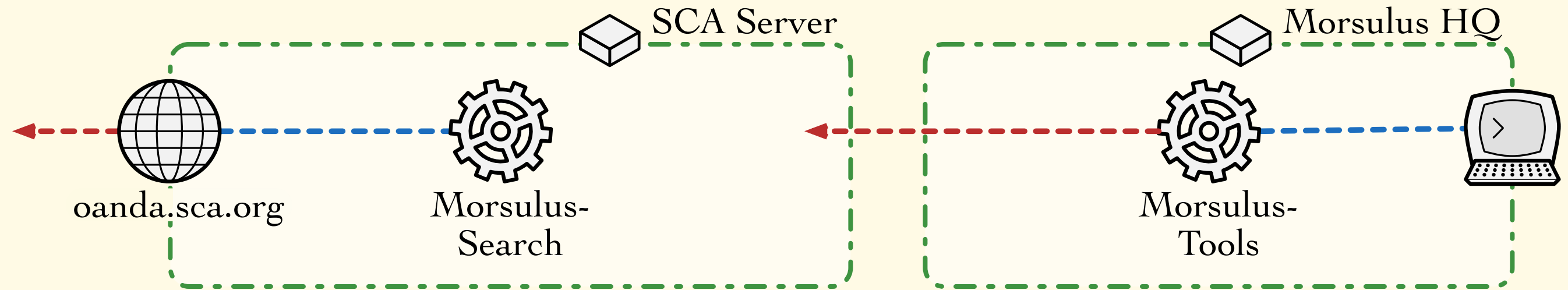
## The O&A Software Is Open Source

The software for both the website and the back-end update tools are bundled together as the “Morsulus-tools” package, which you can find on GitHub.

- Get the O&A code from <https://github.com/herveus/Morsulus-tools>

It's all written in Perl, using an architecture and code style set in the mid 1990s.

## Front-End and Back-End Environments

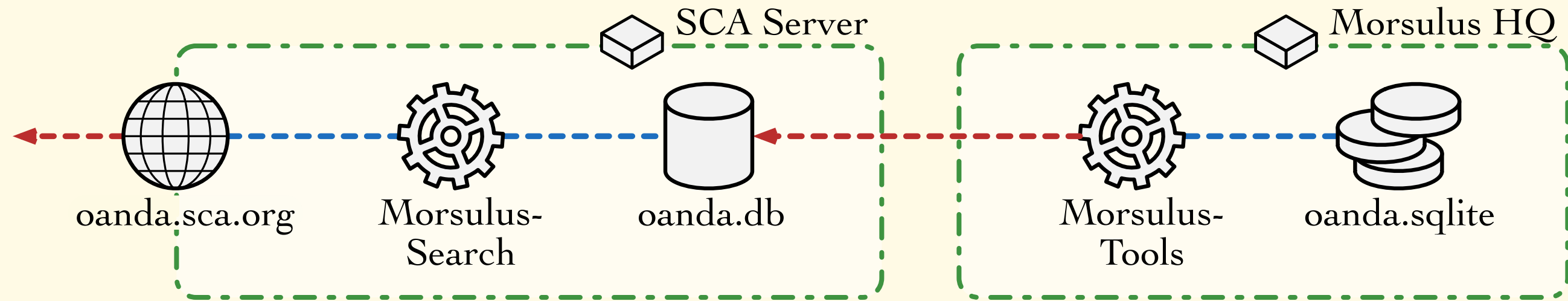


The web front-end code runs on a publicly-connected server, where it generates a web interface using HTML and CGI.

The back-end update tools run on Morsulus' personal workstation. Most of the tools operate from the command line; one has an X11 desktop UI built with TK.

Both pieces should run on any modern Unix-like environment.

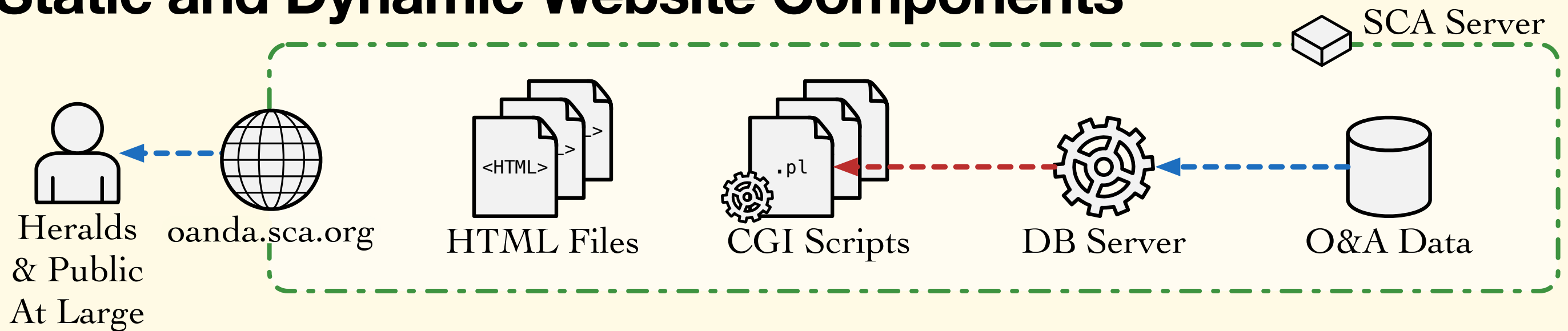
## Front-End and Back-End Databases



Behind the scenes, there are two different versions of the database:

- The authoritative master database is kept on Morsulus's personal workstation. It's a SQLite relational database. All updates are performed here.
- When a new version is ready for publication, data is exported into a delimited text file and transferred to the public server that operates the O&A website.

# Static and Dynamic Website Components



The website is built from several types of elements:

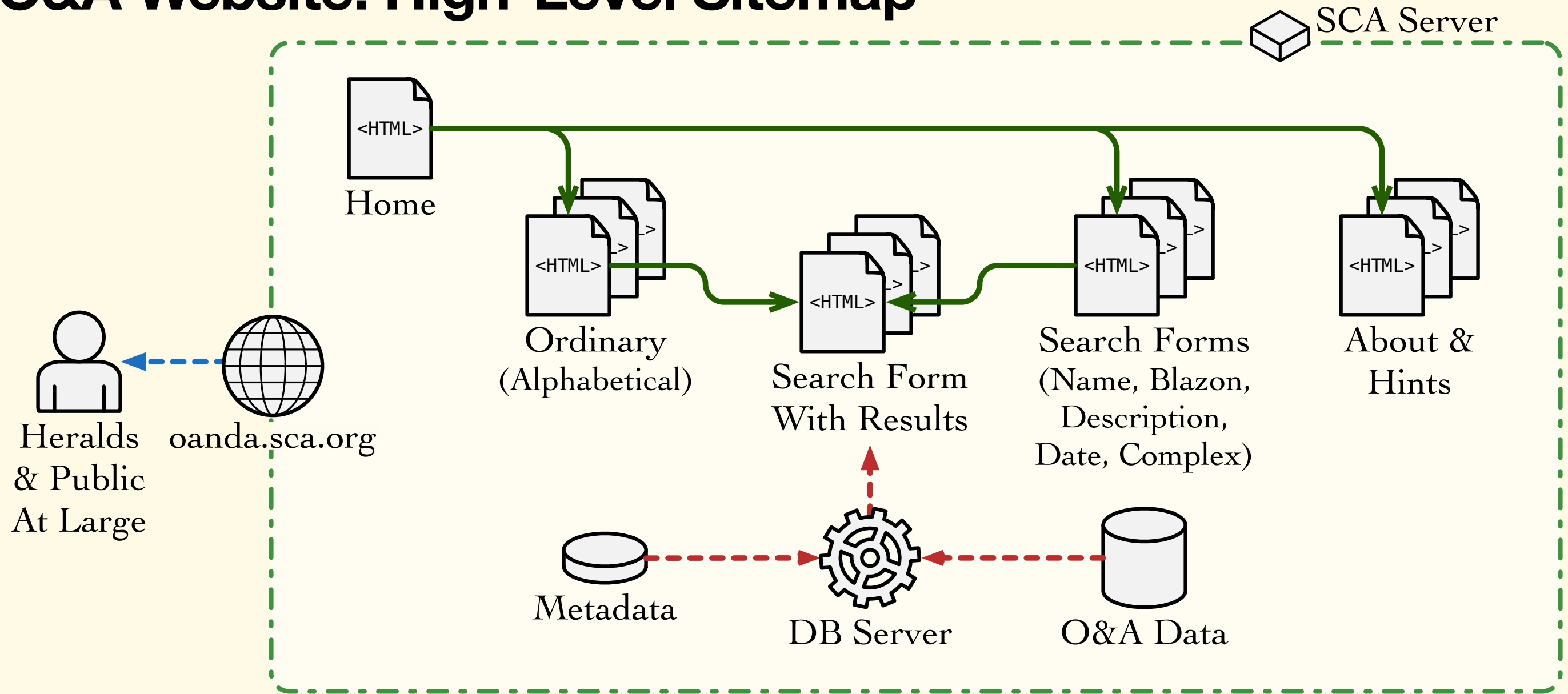
- Static HTML files, which are assembled from simple templating ahead of time.
- Short-lived CGI scripts, which generate the dynamic search forms.
- A long-lived database server, which answers queries from the CGI scripts.

## O&A Website: High-Level Site Architecture

The front-end site is organized around a few key features:

- The ordinary includes a static list of categories, with each heading linked to the corresponding armory-description search results.
- The search forms start out blank but when you submit them you get updated versions that include the search results, fetched live from the DB server.

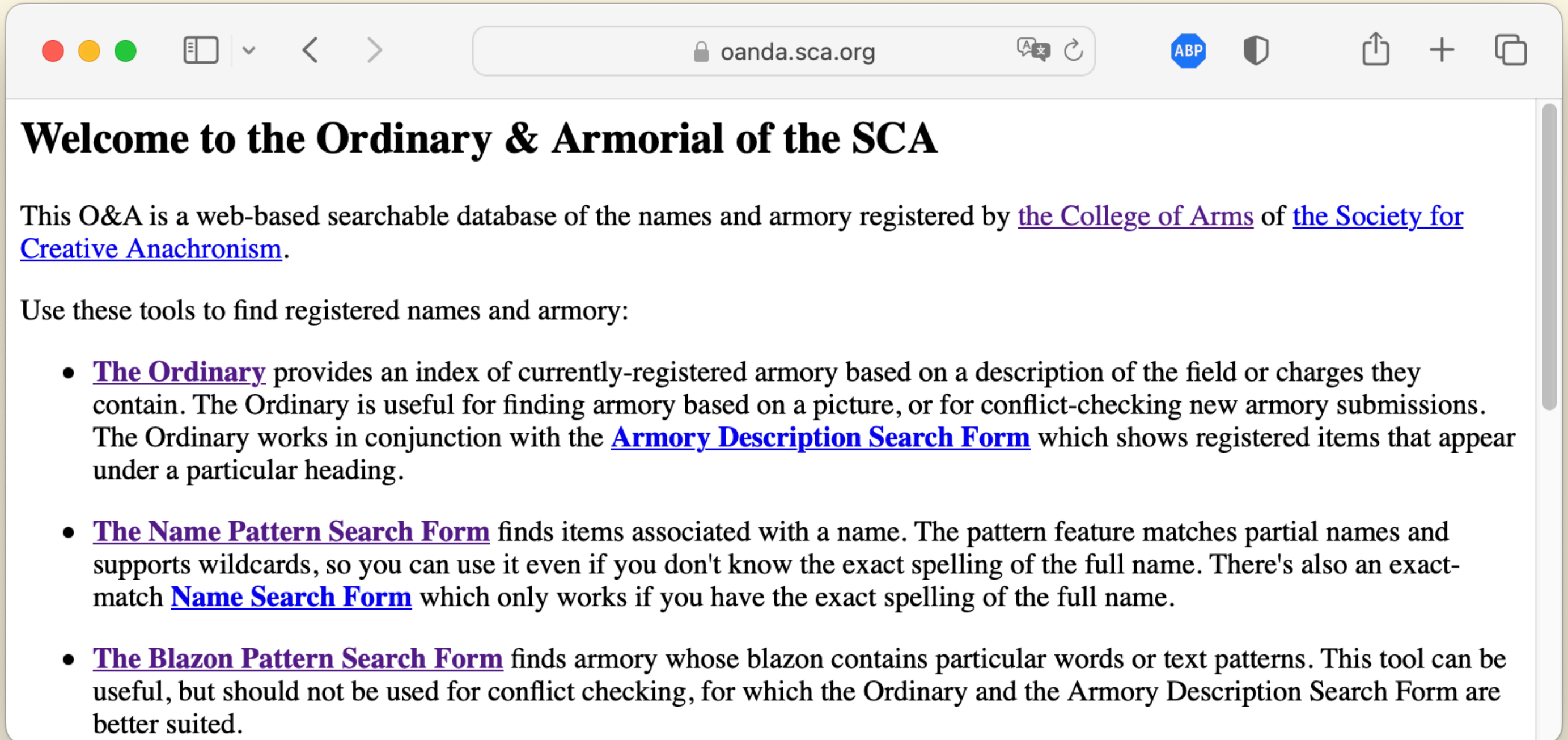
# O&A Website: High-Level Sitemap



## The O&A Home Page

The O&A home page sets the tone for the rest of the site, with a very plain design.

A brief introduction is followed by links to the site's main features — the ordinary and the various search forms, and at the bottom are some links to documentation pages that explain how to use the site.



The screenshot shows a web browser window with the address bar displaying "oanda.sca.org". The page title is "Welcome to the Ordinary & Armorial of the SCA". The main content describes the O&A as a web-based searchable database of names and armory registered by the College of Arms of the Society for Creative Anachronism. It lists three search tools: The Ordinary, The Name Pattern Search Form, and The Blazon Pattern Search Form.

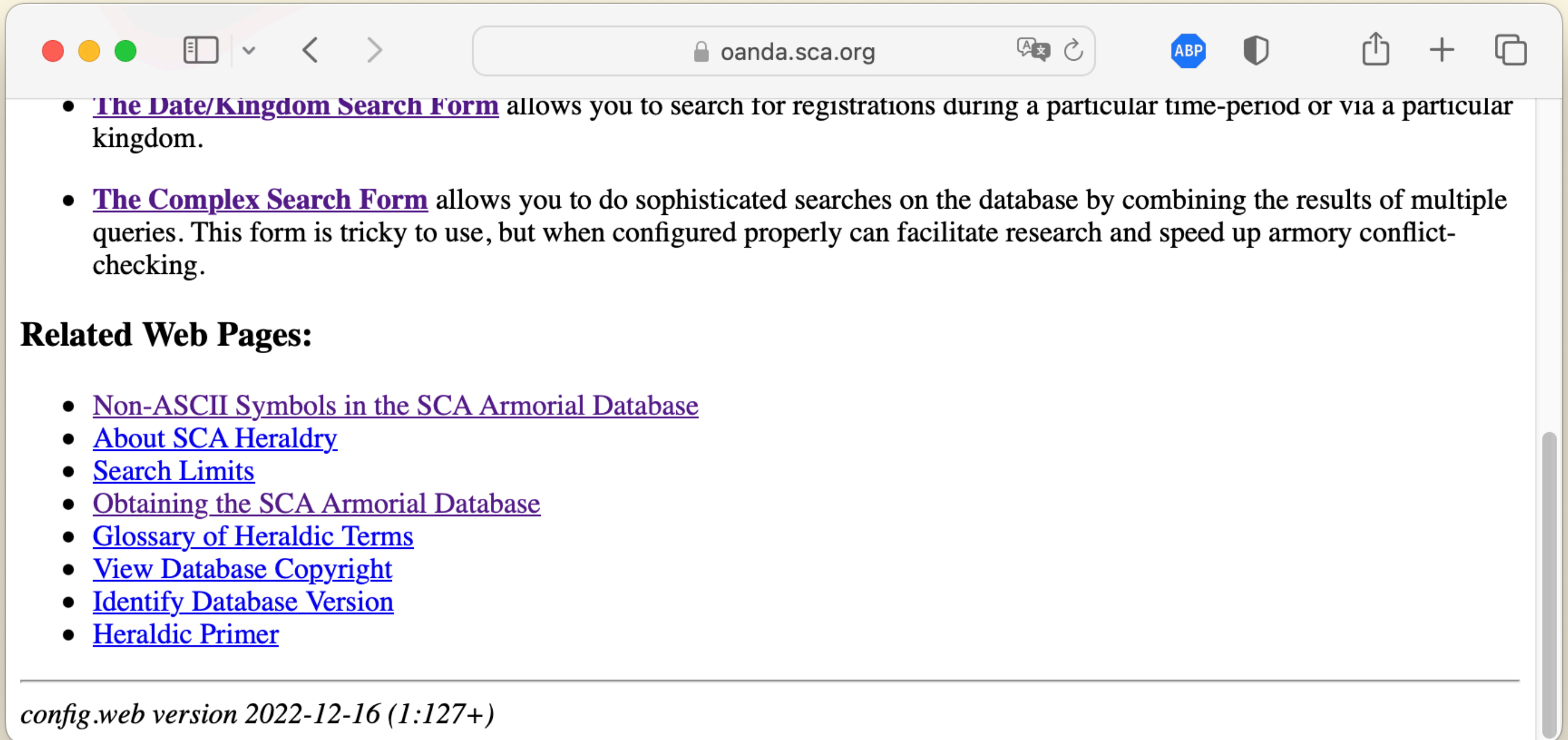
# Welcome to the Ordinary & Armorial of the SCA

This O&A is a web-based searchable database of the names and armory registered by [the College of Arms](#) of [the Society for Creative Anachronism](#).

Use these tools to find registered names and armory:

- [The Ordinary](#) provides an index of currently-registered armory based on a description of the field or charges they contain. The Ordinary is useful for finding armory based on a picture, or for conflict-checking new armory submissions. The Ordinary works in conjunction with the [Armory Description Search Form](#) which shows registered items that appear under a particular heading.
- [The Name Pattern Search Form](#) finds items associated with a name. The pattern feature matches partial names and supports wildcards, so you can use it even if you don't know the exact spelling of the full name. There's also an exact-match [Name Search Form](#) which only works if you have the exact spelling of the full name.
- [The Blazon Pattern Search Form](#) finds armory whose blazon contains particular words or text patterns. This tool can be useful, but should not be used for conflict checking, for which the Ordinary and the Armory Description Search Form are better suited.





The screenshot shows a web browser window with the address bar displaying "oanda.sca.org". The page content includes two main bullet points describing search forms, a section for related web pages with a list of links, and a footer indicating the version of the web configuration.

- [The Date/Kingdom Search Form](#) allows you to search for registrations during a particular time-period or via a particular kingdom.
- [The Complex Search Form](#) allows you to do sophisticated searches on the database by combining the results of multiple queries. This form is tricky to use, but when configured properly can facilitate research and speed up armory conflict-checking.

**Related Web Pages:**

- [Non-ASCII Symbols in the SCA Armorial Database](#)
- [About SCA Heraldry](#)
- [Search Limits](#)
- [Obtaining the SCA Armorial Database](#)
- [Glossary of Heraldic Terms](#)
- [View Database Copyright](#)
- [Identify Database Version](#)
- [Heraldic Primer](#)

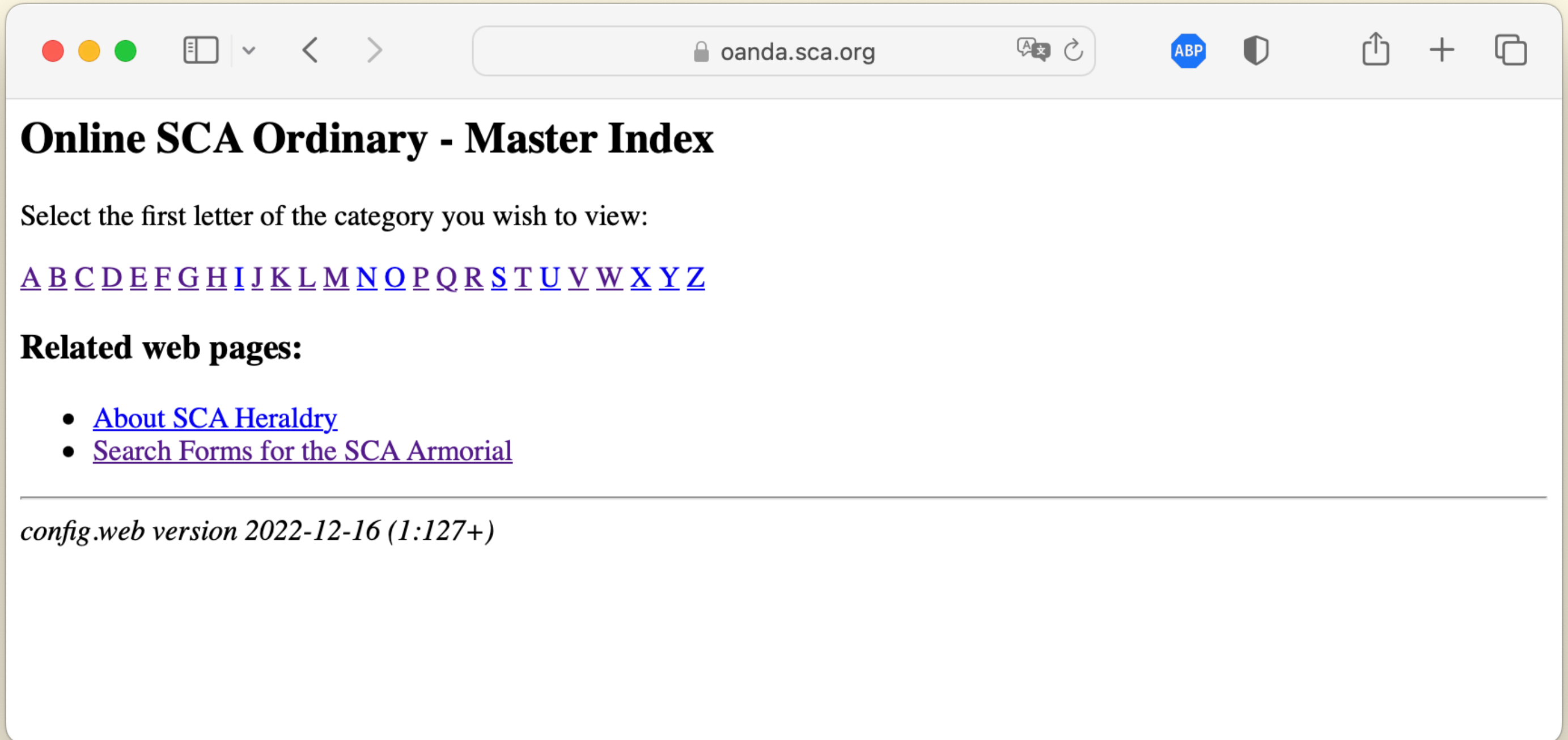
*config.web version 2022-12-16 (1:127+)*

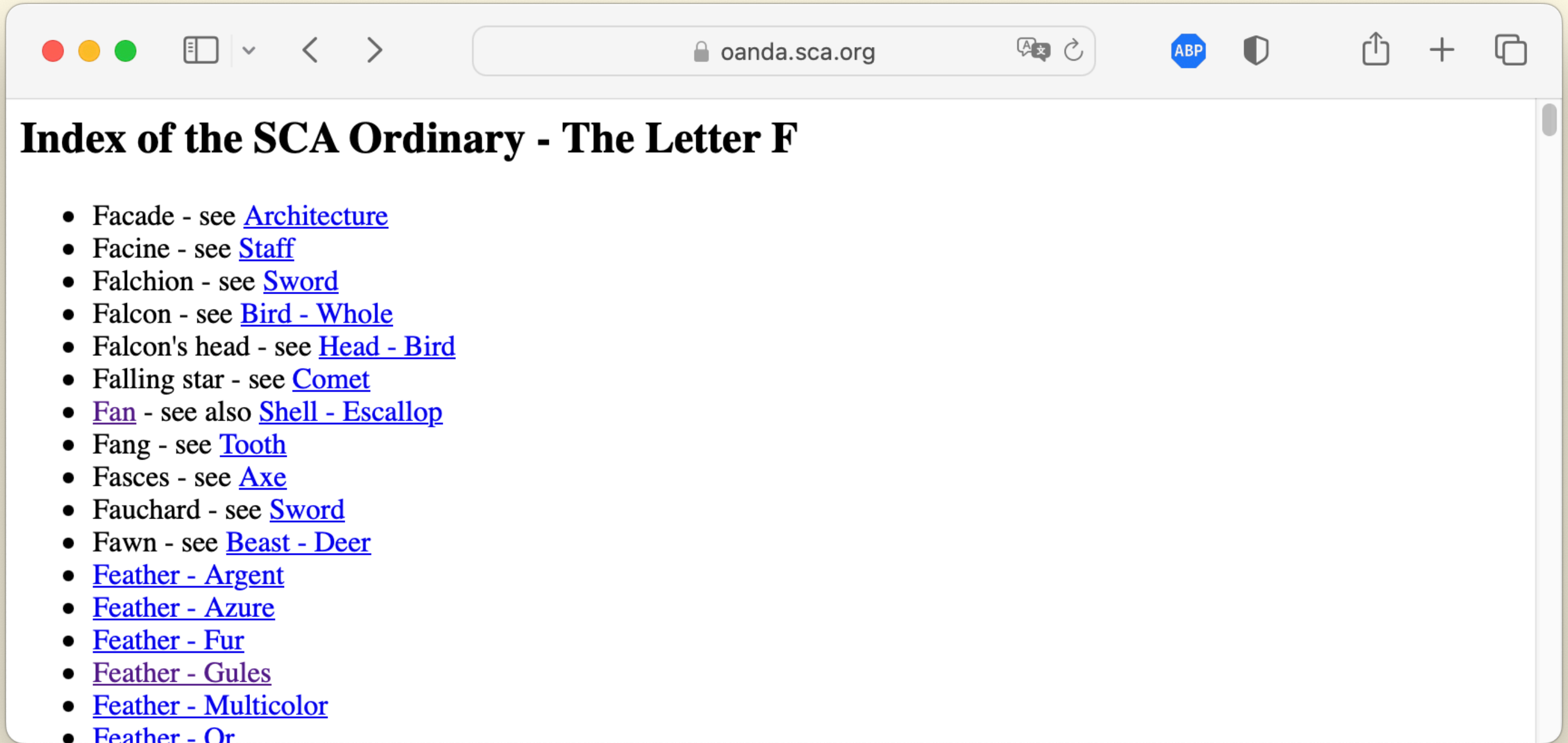
# The Ordinary

The ordinary is sorted alphabetically and split up into pages by first letter.

It lists all of the categories (with a few exceptions), some as stand-alone entries like “Fan” and others as exploded entries like “Feather,” which appears multiple times, subdivided by tincture or number or some other characteristic.

The pages also include numerous cross-references like “Falcon” — all falcons are filed under Bird — and some see-alsos like “Shell - Escallop” that remind us that these categories are related or can be visually similar, so that we might need to check both of them.





The screenshot shows a web browser window with the address bar displaying 'oanda.sca.org'. The page title is 'Index of the SCA Ordinary - The Letter F'. The content is a list of heraldic terms starting with 'F', each followed by a reference to another page in the ordinary.

- Facade - see [Architecture](#)
- Facine - see [Staff](#)
- Falchion - see [Sword](#)
- Falcon - see [Bird - Whole](#)
- Falcon's head - see [Head - Bird](#)
- Falling star - see [Comet](#)
- [Fan](#) - see also [Shell - Escallop](#)
- Fang - see [Tooth](#)
- Fasces - see [Axe](#)
- Fauchard - see [Sword](#)
- Fawn - see [Beast - Deer](#)
- [Feather - Argent](#)
- [Feather - Azure](#)
- [Feather - Fur](#)
- [Feather - Gules](#)
- [Feather - Multicolor](#)
- [Feather - Or](#)

## Search Results for The Ordinary

If we click on “Fan” we’ll get the armory description search results screen for the heading “FAN”, with the 44 matching items fetched from the DB Server and formatted.

Scrolling down, we can see that all of the information from the O&A DB is shown — primary name, registration date, blazon, and where it applies, other associations such as a household name.

We also get a good example of why we want to look things up by description rather than blazon, because this includes “Azure, three vanneaux Or”, even though it doesn’t have the word “fan” in the blazon, because behind the scenes, the Morsulus Herald has determined that a vanneau is a kind of fan, and has hand-tagged this record with the FAN heading.

oanda.sca.org

## Armory Description Search Form

There are [other search forms](#) available. For help using this form, please refer to the [hints page](#).

Enter a description of the armory for which you are searching ->

**Actions:**

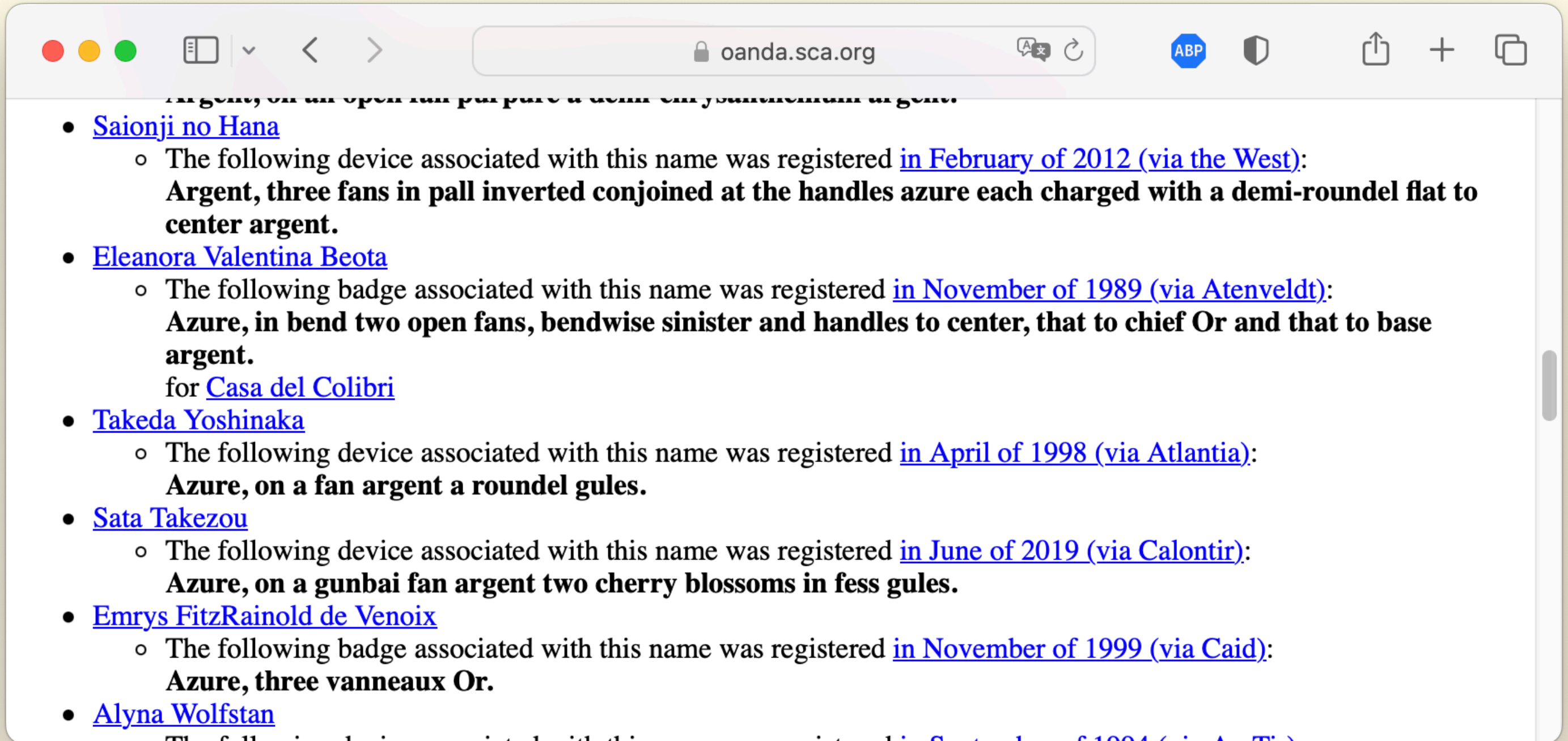
---

**Results:**

**44 items matched description="FAN".**

- [Matsudaira Kentarou Toshiyori](#)  
The following badge associated with this name was registered [in October of 1995 \(via Atlantia\)](#):  
(fieldless) A fan conjoined in pale with another inverted argent, each charged with a Japanese pine tree that

Display a menu



oanda.sca.org

- [Saionji no Hana](#)
  - The following device associated with this name was registered [in February of 2012 \(via the West\)](#):  
**Argent, three fans in pall inverted conjoined at the handles azure each charged with a demi-roundel flat to center argent.**
- [Eleanora Valentina Beota](#)
  - The following badge associated with this name was registered [in November of 1989 \(via Atenveldt\)](#):  
**Azure, in bend two open fans, bendwise sinister and handles to center, that to chief Or and that to base argent.**  
for [Casa del Colibri](#)
- [Takeda Yoshinaka](#)
  - The following device associated with this name was registered [in April of 1998 \(via Atlantia\)](#):  
**Azure, on a fan argent a roundel gules.**
- [Sata Takezou](#)
  - The following device associated with this name was registered [in June of 2019 \(via Calontir\)](#):  
**Azure, on a gunbai fan argent two cherry blossoms in fess gules.**
- [Emrys FitzRainold de Venox](#)
  - The following badge associated with this name was registered [in November of 1999 \(via Caid\)](#):  
**Azure, three vanneaux Or.**
- [Alyna Wolfstan](#)
  - The following device associated with this name was registered [in September of 1994 \(via An Tir\)](#):

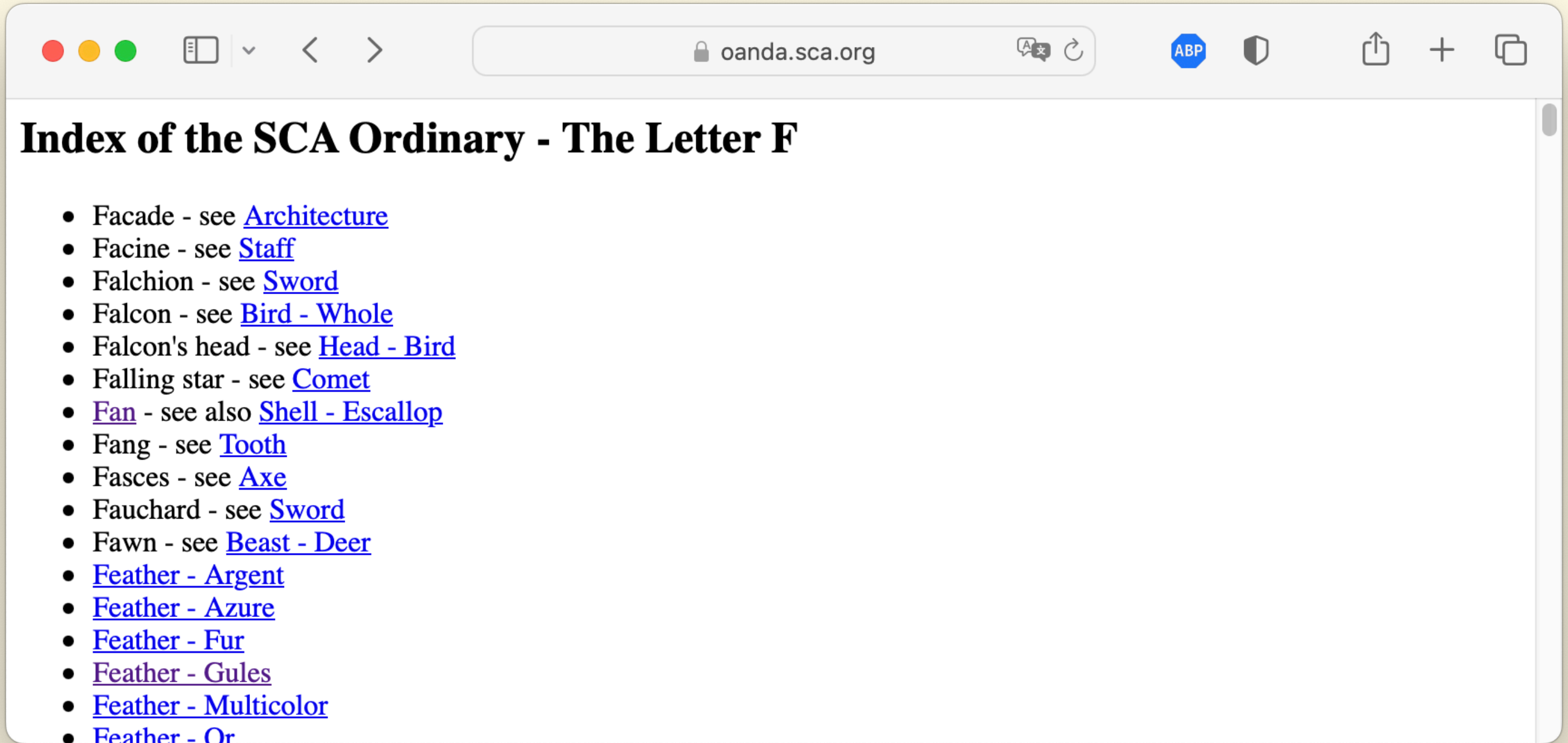
## More Ordinary Search Results

Let's go back to the Ordinary and click on one of the "feather" entries. There are multiple items here because at some point Morsulus decided there were so enough items with feathers that it was helpful to split them and decided that tincture was the best way to do so.

If we click on "Feather - Gules" we get the search result for "FEATHER AND QUILL:gules" which is a description plus a feature, separated by a colon, and we've fetched the matching results from the DB server.

Paging down again we see that we're matching feathers and quills and "plumes", and we can see an example of a jointly-owned badge associated with both of its owners.





The screenshot shows a web browser window with the address bar displaying 'oanda.sca.org'. The page title is 'Index of the SCA Ordinary - The Letter F'. The content is a list of heraldic terms starting with 'F', each followed by a reference to another page in the ordinary. The browser interface includes standard window controls (red, yellow, green buttons), a search icon, and navigation arrows. The address bar also shows a lock icon and a refresh icon. The page content is as follows:

- Facade - see [Architecture](#)
- Facine - see [Staff](#)
- Falchion - see [Sword](#)
- Falcon - see [Bird - Whole](#)
- Falcon's head - see [Head - Bird](#)
- Falling star - see [Comet](#)
- [Fan](#) - see also [Shell - Escallop](#)
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- Fauchard - see [Sword](#)
- Fawn - see [Beast - Deer](#)
- [Feather - Argent](#)
- [Feather - Azure](#)
- [Feather - Fur](#)
- [Feather - Gules](#)
- [Feather - Multicolor](#)
- [Feather - Or](#)



oanda.sca.org

## Armory Description Search Form

There are [other search forms](#) available. For help using this form, please refer to the [hints page](#).

Enter a description of the armory for which you are searching ->

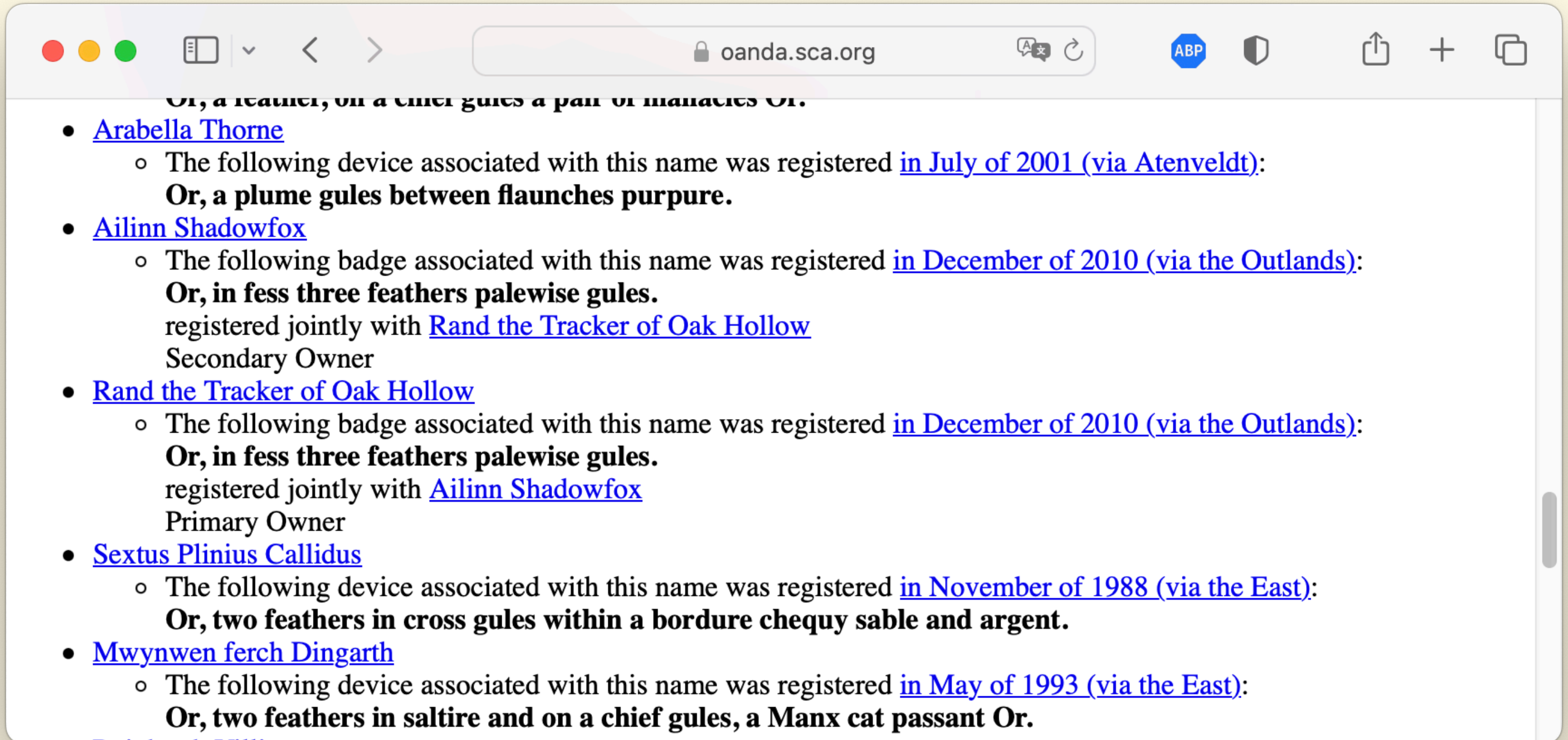
### Actions:

---

### Results:

40 items matched description="*FEATHER AND QUILL:gules*".

- [An Crosaire, Barony of](#)
  - The following badge associated with this name was registered [in December of 2003 \(via Trimaris\)](#):  
**(Fieldless) A feather fesswise gules.**



OR, a feather, on a chief gules a pair of manacles Or.

- [Arabella Thorne](#)
  - The following device associated with this name was registered [in July of 2001 \(via Atenveldt\)](#):  
**Or, a plume gules between flanches purple.**
- [Ailinn Shadowfox](#)
  - The following badge associated with this name was registered [in December of 2010 \(via the Outlands\)](#):  
**Or, in fess three feathers palewise gules.**  
registered jointly with [Rand the Tracker of Oak Hollow](#)  
Secondary Owner
- [Rand the Tracker of Oak Hollow](#)
  - The following badge associated with this name was registered [in December of 2010 \(via the Outlands\)](#):  
**Or, in fess three feathers palewise gules.**  
registered jointly with [Ailinn Shadowfox](#)  
Primary Owner
- [Sextus Plinius Callidus](#)
  - The following device associated with this name was registered [in November of 1988 \(via the East\)](#):  
**Or, two feathers in cross gules within a bordure chequy sable and argent.**
- [Mwynwen ferch Dingarth](#)
  - The following device associated with this name was registered [in May of 1993 \(via the East\)](#):  
**Or, two feathers in saltire and on a chief gules, a Manx cat passant Or.**

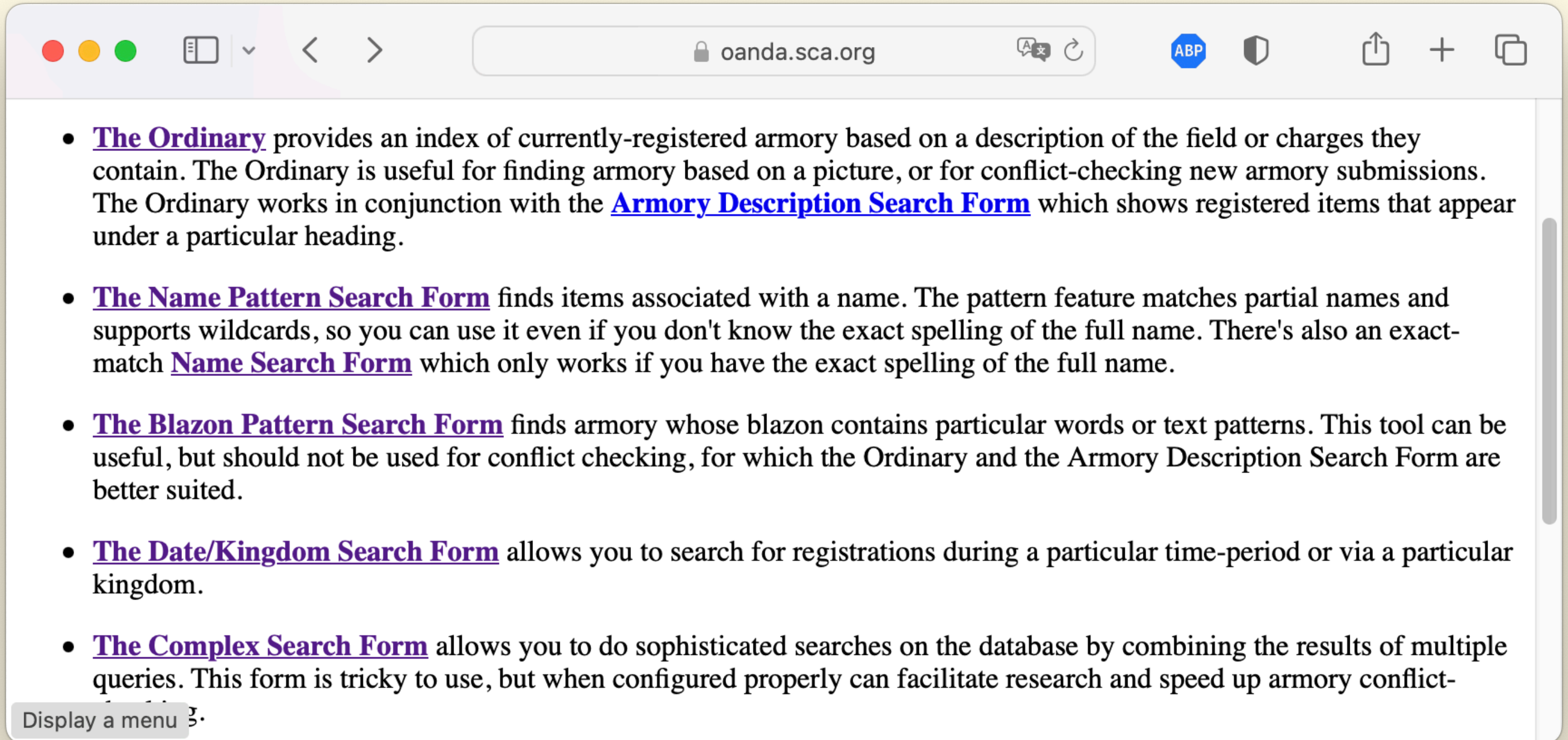
# Search Forms

There are five types of search forms on the O&A site:

- Name: Search on primary and secondary names, with options and patterns.
- Blazon: Search on armory blazons, with patterns.
- Description: Search on armory description codes, with categories and features. (This is also where you end up after clicking a category in the ordinary.)
- Date/Kingdom: Search by LoAR year and month, plus submitting kingdom.
- Complex: Use any number of the above criteria, in any combination, Also supports record type criteria, and weights to control scoring.

They all provide similar options to sort and display the results.

Under the hood they all fundamentally work the same way.



The screenshot shows a web browser window with the address bar displaying "oanda.sca.org". The page content consists of a bulleted list of search forms. The browser's address bar includes a lock icon, the URL "oanda.sca.org", and several extension icons (ABP, a shield, and a share icon). The list items are:

- **[The Ordinary](#)** provides an index of currently-registered armory based on a description of the field or charges they contain. The Ordinary is useful for finding armory based on a picture, or for conflict-checking new armory submissions. The Ordinary works in conjunction with the **[Armory Description Search Form](#)** which shows registered items that appear under a particular heading.
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- **[The Complex Search Form](#)** allows you to do sophisticated searches on the database by combining the results of multiple queries. This form is tricky to use, but when configured properly can facilitate research and speed up armory conflict-

Display a menu ☰

**Name Pattern Search Form**

There are [other search forms](#) available. For help using this form, please refer to the [hints page](#).

Enter the name pattern for which you are searching ->

Select type of search ->:

Maximum number of items to display ->

- Sort items by
- Display dates in  style.
- Glossary links
- Armory descriptions
- Raw display mode
- Registration status

**Name Pattern Search Form**

There are [other search forms](#) available. For help using this form, please refer to the [hints page](#).

Enter the name pattern for which you are searching ->

Select type of search ->

Maximum number of items to display ->

- Sort items by
- Display dates in  style.
- Glossary links
- Armory descriptions
- Raw display mode
- Registration status

**Search criteria**

**Result display options**

**Submit**

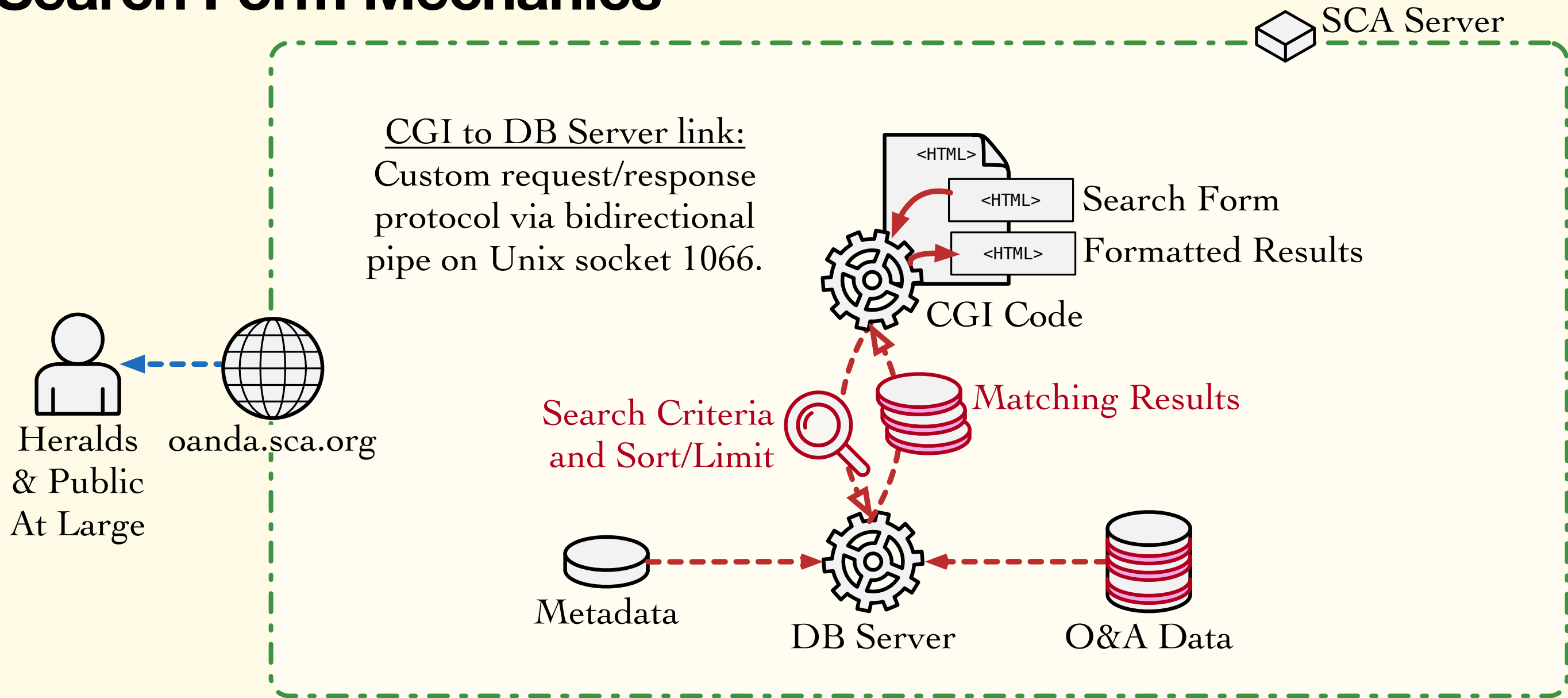
## Search Form Mechanics

Each of the search types is implemented as a CGI script, which displays the search form, and if criteria have been submitted, passes those to the DB Server and includes a formatted version of the results before shipping the HTML page back to the user.

The CGI script communicates with the DB server using a simple custom request/response protocol, in which the script opens a Unix socket to the DB server (on port 1066), sends the criteria and waits while the server figures out which lines of the database match and sends those back to be formatted for display.



# Search Form Mechanics



# Search Engine Criteria

Mirroring the various search forms, there are five basic types of search criteria:

- Name: Pattern to match; exact, narrow, or broad search; case sensitive or not.
- Blazon: Pattern to match; case sensitive or not.
- Description: Heading and optionally features to match.
- Date/Kingdom: Minimum year-month; maximum year-month; kingdom codes.
- Record Type: Pattern for record types.

Each database search request also specifies:

- Limit of how many matching items to return (often 500).
- Sorting rules to be applied to the matches.

# Regular Expressions

The name and blazon criteria support “pattern matching” via regular expressions.

- Regular expressions are enormously powerful, but can be challenging to master.
- The “regex” syntax is standardized and there are many how-to guides online.

The following punctuation codes are the ones you’re most likely to use:

- `^rob` — match at the very beginning
- `son$` — match at the very end
- `\brobert\b` — match a whole word
- `da.e` — match any character here
- `[bh1]arry` — any of these letters
- `s\w+a` — any number of letters

Those can be stacked together in many combinations, and the results can look intimidating, but with time you can grow accustomed to reading and writing them.

## Regular Expression Example

Let's look for "Merry Rose," "Mary Raus," "Maria de Rosa," "Marie Roset", etc:

- `^m[aeiouy]+r.\+ \br[aeiouy]+[sz] \w+\$` — As clear as mud!

## Regular Expression Example

Let's look for "Merry Rose," "Mary Raus," "Maria de Rosa," "Marie Roset", etc:

- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — name must start with M
- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — then any number of vowels
- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — then R, followed by anything
- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — then a word starting with R
- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — then any number of vowels
- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — then either S or Z
- `^m[aeiouy]+r.+\\br[aeiouy]+[sz]\\w+$` — end with any number of letters

## Regular Expressions for “Sounds Like” Name Matching

As suggested by that example, the most common uses of regular expressions are for “fuzzy” name matching:

- Finding a registered name when you’re not sure of the exact spelling.
- Finding potential conflicts that might sound like a new name being submitted.

To find similar names, choose some salient features and leave the rest fuzzy.

For more-detailed tips and techniques, look for Tanczos Istvan’s classes/handouts:

- Article: “Using The Name Pattern Search Form”  
<http://www.tanzos.net/~lewis/SCA/Heraldry/Class/NamePattern.html>
- Class video, KWHSS: “Name Conflict with the Name Pattern Search Form”

## Record Type Criteria

Searching by type is a rarely-used feature, available in the complex search form.

See the “Format of the SCA Armorial Database” page for a list of record types.

You can combine multiple types with pipe characters:

- `b|d|a|B|BD|D|D\?` — armory
- `g|s` — regalia and seals
- `b|d|a|B|BD|D|D\?|g|s` - armory-like items
- `AN|B|BN|BD|D|HN|N|O|t` - name-like items
- `BN|BD|BNC|BNC|Bv|Bvc|u` - branch items

This is most useful for historical surveys of past College of Arms activity.

## Search Engine Scoring

When you only have one search criterion, the database server can simply find all of the matching records, sort them as requested, discard items over the limit, and return the results — but what should it do if you provide more than one criteria?

The database runs separate searches for each criterion, and then combines them, assigning a score to each record based on how many separate rules it matched.

By default, each criterion has a weight of 1, but you can specify custom values.

- Set a criterion to a weight of 0 to ignore it; can be used to “comment out” a line.
- Set a criterion to a weight of 2 (or greater) to score its matches more highly; this can be used when conflict checking to mark lines which would give an SC.
- Set a criterion to a weight of +1 to discard any previously-discovered items that didn't also match this rule; can be used at the end of the list to mean “required.”



## Database Updates

The primary source of database updates is the monthly flow of LoARs.

- This includes new registrations, as well as releases, transfers, reblazons and errata.
- When the LoARs are exported from OSCAR, in addition to the HTML and PDF versions, it's also exported in an XML format that is fed into the O&A.

There are also occasional updates that are done by hand:

- Errors in indexing or other corrections that do not require an LoAR errata item.
- Bulk updates, for example if a new ruling changes how an entire armory category should be indexed.

## Back-End Workflow

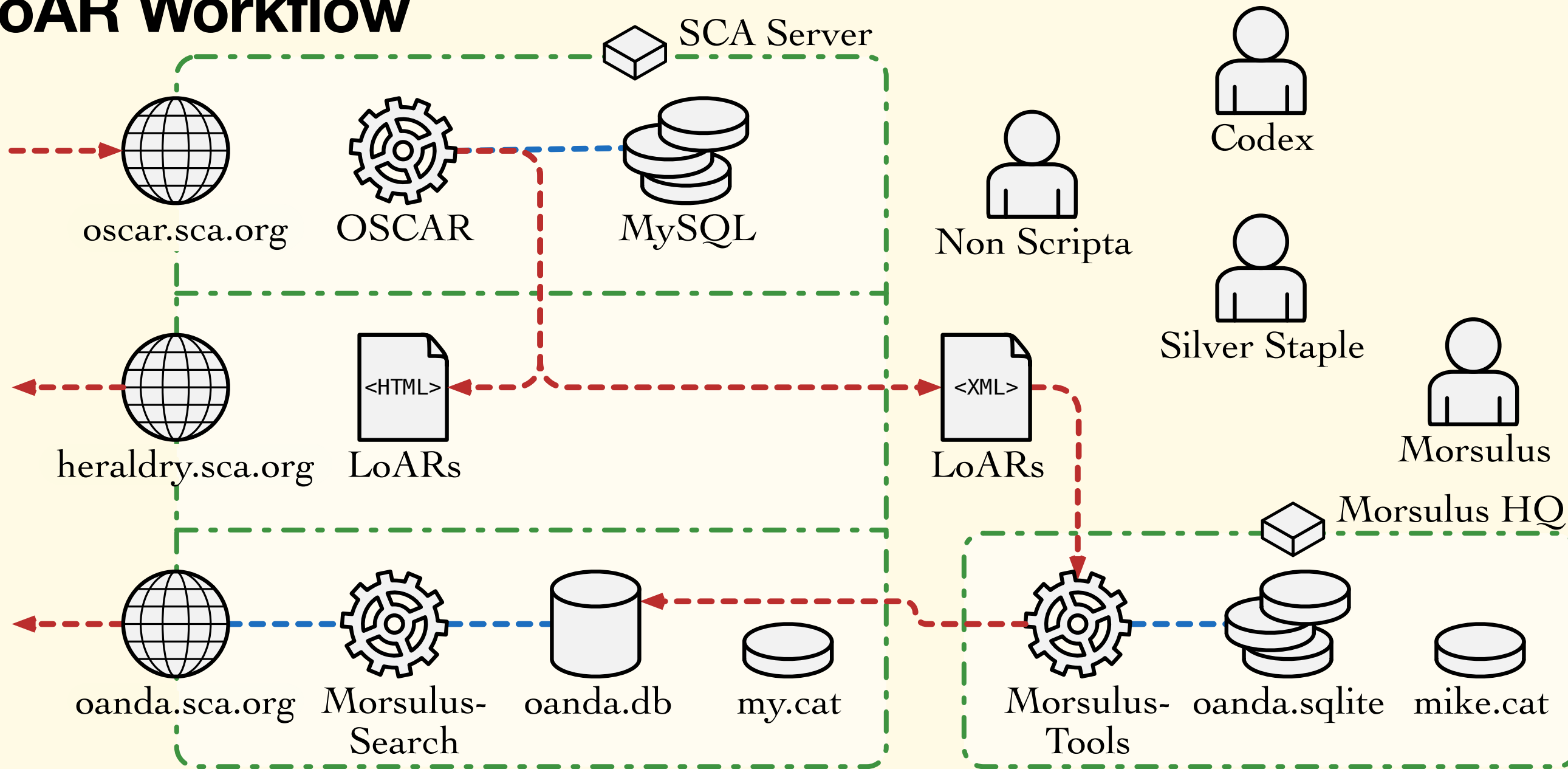
Registrations start in OSCAR, the Online System for Commentary and Response, at [oscar.sca.org](http://oscar.sca.org) where a collection of PHP code backed by a MySQL database allows for letters to be entered and tracked while authorized users provide commentary and the Sovereigns make decisions. This system was created by and is maintained by Istvan Non Scripta.

After the Sovereigns make their decisions for the month, the Silver Staple herald exports LoARs from OSCAR, first as drafts during the two proof passes, and then as the final letter after any lingering issues have been resolved.

Those exports are delivered to Morsulus as XML files, who processes them in two ways:

- One tool converts the XML into the HTML, which is uploaded to the College of Arms's website (otherwise maintained by the Codex Herald).
- Another set of tools converts the XML into updates to the SQLite version of the database, which is exported that to the oanda website.

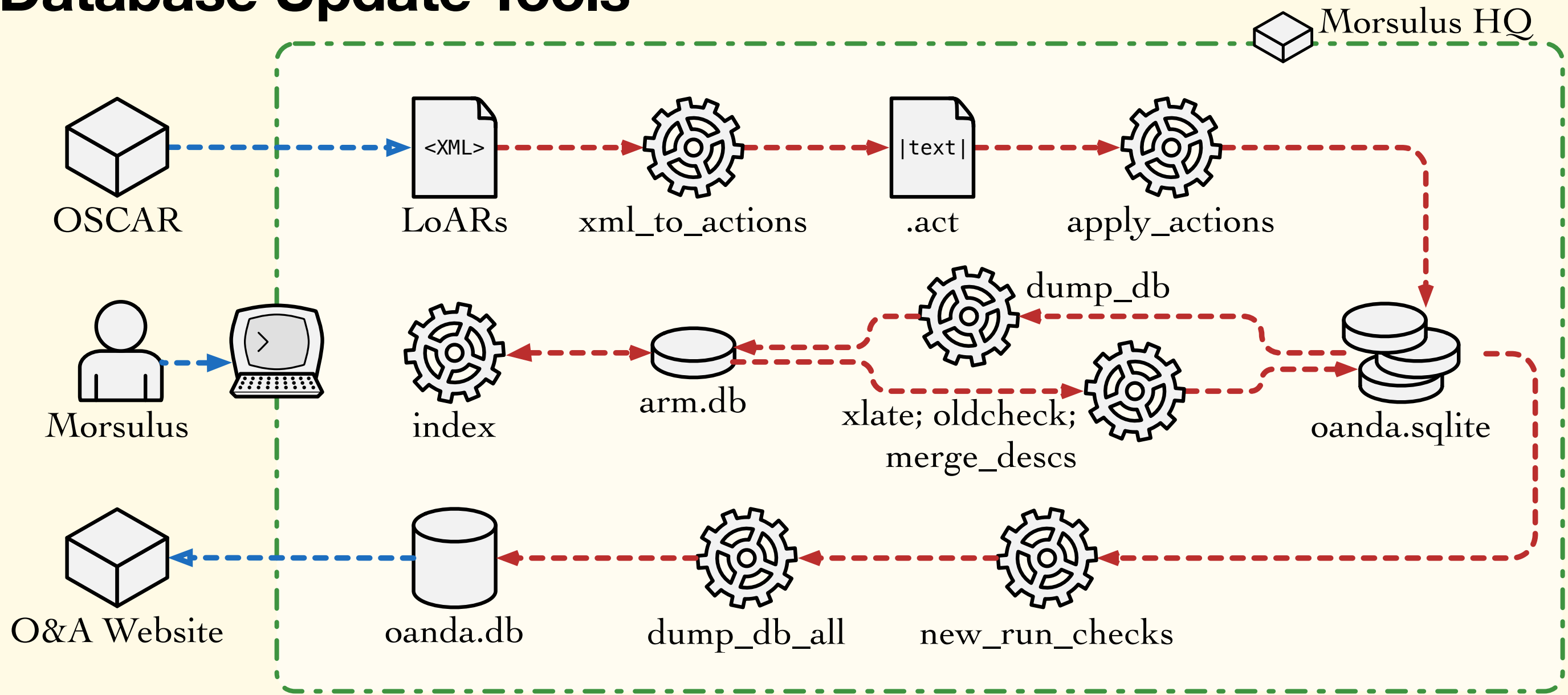
# LoAR Workflow



## Back-End Workflow

- The LoARs arrives as a zip archive of XML files, which get fed into a script that creates an “actions file” describing all of the new registrations, releases, transfers, and other changes in delimited text format.
- Those changes get applied to a copy of the prior month’s database by a script that flags any problems — for example, if the LoAR has a slightly different spelling of someone’s name, that’ll get flagged as an issue that needs to be corrected.
- Next the dump\_db script is used to extract new blazons which have never been indexed with armorial descriptions and write them to a new file. Then the index program is run, which provides a graphical user interface in which Morsulus reviews each new blazon and constructs the corresponding armorial descriptions. When that indexing is complete, the xlate.pl and oldcheck.pl scripts make adjustments to the armory descriptions and ensure that no errors have crept into the data, and then the merge\_descs script migrates the new armory descriptions into the main SQLite database.
- When all of the data has been processed, the new\_run\_checks script scans the main SQLite database to check for errors or inconsistencies. Finally, the dump\_db\_all script extracts all of the necessary public data and exports it as a pipe-delimited text file which can be copied to the live web server and used to serve O&A requests.

# Database Update Tools



## Friends of my.cat

In addition to the my.cat file used on the website, the back-end code has several similar files which are used when preparing the site for deployment.

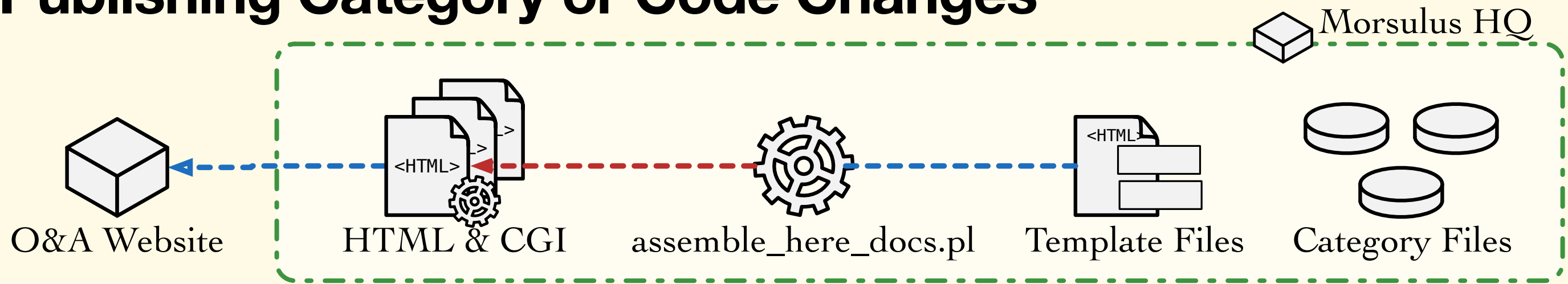
- Some provide extra information about how the Ordinary should be organized.
- Some define a parallel, mostly-identical set of headings used in the back-end version of the database. These are translated when the files are exported.
  - Translations are used to group items together if Laurel rules they can conflict. For example, CASTLE and TOWER are indexed separately in the back-end data, but when exported to the web they are converted to CASTLE:t1 and CASTLE:t2 so that searches for either will match both.

Morsulus must be careful when adding new headings to include them in each file.

## Friends of my.cat

- my.cat: Holds “web-style” headings, features, and cross references. Used by the database server and by the public.
- mycat.pl: Pre-parsed version of my.cat represented as Perl data structures.
- tprint.cat: Used to generate the Ordinary. Shows which headings get broken out into multiple lines like “annulet, 1, argent”.
- temp.cat: Used to generate the Ordinary. Specifies lines that should be skipped.
- mike.cat: Holds “classic-style” headings, features, and cross references.
- mike.hdg: Specifies how headings are grouped together in the indexing tool.
- old\_new.desc: Specifies mappings from “classic-style” to “web-style” headings.

## Publishing Category or Code Changes



When new categories are added to the ordinary, or when changes are made to the underlying search code, the website needs to be re-published.

A Perl script combines template files with category files to produce HTML files and CGI scripts, which are packaged into an installer script named configweb.

The configweb package is deployed to the website where it is combined with local configuration options to unpack the individual HTML and CGI files.



## Other Ways of Accessing the O&A Data

While most O&A access is through [oanda.sca.org](http://oanda.sca.org), there are other alternatives:

- A few people (or kingdoms) operate mirrors of the O&A website.
  - There are fewer of these than there were a decade ago.
  - A local mirror is run at Pennsic to compensate for poor connectivity.
  - Tanczos Istvan's HeraldStick project provides tools to run a mirror in a virtual machine on a Windows computer.
- There are a few Windows applications that parse and search the `oanda.db` file.
  - Oddr Piálfason's *Aspilogia* for Windows 10.
  - Hirsch von Henford's *dBASE Ordinary and Armorial*.
  - Neither of these seems to be widely used or actively maintained.

## Other Ways of Accessing the O&A Data

- As an ebook from [oanda.gigo.com](http://oanda.gigo.com).
  - Until about 2013, Morsulus would periodically generate a Postscript or PDF file containing printable versions of the O&A data, but as the database grew, that became increasingly unwieldy to re-print every year.
  - However, there are a number of heralds who are still accustomed to working from this format, so when Morsulus stopped generating printable versions, Jason Fesler of the West built a tool that converts the O&A database to EPUB format, which can be viewed in ebook readers or printed.
  - Every day this tool checks to see if new O&A data is available, and if so, runs it through the conversion and publishes the new files.

## Possible Future Enhancements

- There are a bunch of minor improvements to the O&A website that are currently under consideration to make the search forms more powerful and easier to use.
- It would be helpful to extend the O&A website to include additional data:
  - Annotations that sometimes appear on the LoARs explaining a decision.
  - Images from OSCAR and the backlog of scanned paper archives.
- We could convert the database to Unicode so that we can handle additional characters without having to repeatedly extend the Da'ud notation system.
- If you have other ideas, let us know!

## Get Your Hands Dirty

Most of the O&A code and data is available online:

- Get the O&A data files from [http://oanda.sca.org/data\\_obtain.html](http://oanda.sca.org/data_obtain.html)
- Get the O&A code from <https://github.com/herveus/Morsulus-tools>
- Get the master SQL database from [https://oanda.sca.org/oanda\\_sql.db](https://oanda.sca.org/oanda_sql.db)
- Mathghamhain's Blog: <http://blog.heraldicart.org/category/oanda-database/>
- Morsulus Wiki: <https://morsulus.org/foswiki/bin/view>
- Morsulus Mailing List: [morsulus+subscribe@groups.io](mailto:morsulus+subscribe@groups.io)

## Contact Me

Feel free to drop me a line:

- If you want more information about anything covered in this presentation.
- If you have technical questions (or suggestions) about the SCA's O&A system.
- If you have technical skills and are looking for ways to put them to work for the College of Arms or the heraldic community.

I'm extremely online and easy to reach:

- Email: [math@heraldicart.org](mailto:math@heraldicart.org)
- Discord: [discordapp.com/users/567538512182771713](https://discordapp.com/users/567538512182771713)
- Messenger: [www.m.me/mcavalletto](https://www.m.me/mcavalletto)