

# **Tools for Emerging and Sustainable Digital Scholarship**

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We are gathered on the unceded land of the **Lenape** peoples in New York, NY, and the **Arapaho, Ute, and Cheyenne** peoples in Boulder, Colorado. We ask you to join us in acknowledging these communities, their elders both past and present, as well as future generations. We acknowledge that our institutions were founded upon exclusions and erasures of many Indigenous peoples, including those on whose land these institutions are located. This acknowledgement demonstrates a commitment to beginning the process of working to dismantle the ongoing legacies of settler colonialism.

# Course Description

In recent years, digital scholarship has moved towards sustainable and lateral infrastructure with minimal computing technologies. This session will address 1) **web-based computational environments** for learning to program and publishing code, and 2) **static website frameworks** for building digital collections and exhibits. Participants will come away with familiarity of various tools and methods, exemplary projects, and potential workflows and ideas for their own projects.

# Learning Outcomes

- Become familiar with minimal computing approaches and techniques in digital scholarship and how they are used
- Feel comfortable evaluating these emerging tools for use at their home institution, across disciplines and contexts

# Introductions

# Framing Minimal Computing

- A philosophy or approach toward digital scholarship that advocates for taking the simplest approach to a project
  - Often the most user-friendly and sustainable
  - Technology, aesthetics, and politics

# Minimal Design

- Reduce number of features & need for updates
  - No databases, comment moderation, CMS updates
- Focus on content
  - Plain text, unembellished layouts, and basic templates
  - Design in the background

# Minimal Use

- Reduce the use of natural resources and technologies
  - Less energy consumption
  - Less demand on user and server hardware
- How might minimal computing increase our shared capacities to think or imagine, and not just our individual capacities to work or produce?



# Minimal Maintenance

- Reduce dependencies and the use of features to decrease the labor of updating, moderating, and stewarding a project over time
  - Decreases the maintenance of machines
  - Use stable file formats (.txt, .csv, etc)

# Minimal Obsolescence

- Reduce turnover of technologies, standards, and formats to increase reuse and decrease waste/discards

# Maximum Justice

- Reduce the use of technological, cultural, social, and economic barriers to increase entry, access, participation, and self-representation in computing and to also build systems/projects premised on social justice and difference, not white supremacy and settler colonialism.
- *Sustainable and lateral infrastructure as care.*
  - Human-centered
  - Reduced environmental impact

# Sustainability & Stewardship

- Proliferation of digital scholarship websites
- What tools can help us achieve our goals of sustainability & stewardship?
  - [Socio-Technical Sustainability Roadmap](#)
  - [Endings Project](#)

2.1 No dependence on server-side software: build a static website with no databases, no PHP, no Python.

2.2 No boutique or fashionable technologies: use only standards with support across all platforms, whose long-term viability is assured. Our choices are HTML5, JavaScript and CSS.

2.3 No dependence on external libraries: no JQuery, no AngularJS, no Bootstrap.

2.4 No query strings: every entity in the site has a unique page with a simple URL that will function on any domain or ip address.

2.5 Graceful failure: every page should still basically work even in the absence of JavaScript or CSS support.

2.6 Massive redundancy: every page contains all the components it needs, so that it will function without the rest of the site if necessary, even though this means duplicating information across the site.

2.7 Relentless validation: every site build involves validation of all input data (XML) and all output code (HTML5, JavaScript, CSS).

2.8 Inclusion of data: every site should include a documented copy of the source data, so that users of the site can repurpose the work easily.

<https://endings.uvic.ca/principles.html#products>

# Minicomp Mini Discussion

- Do the principals of minicomp resonate with you? Why or why not?
- Have you (perhaps unknowingly) applied the principles of minicomp in your work already? Or can you think of projects where this could be useful?

# Static Website Frameworks



# Static Site Frameworks

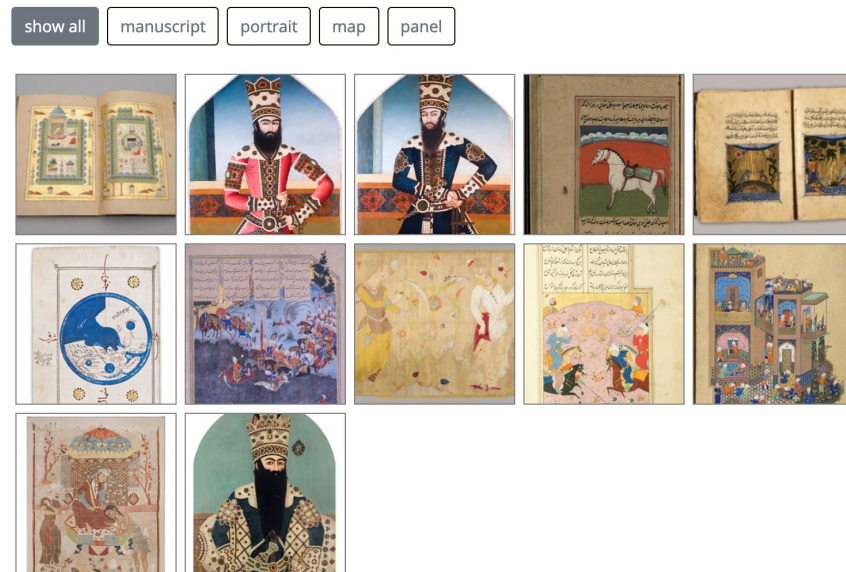
- Tool for creating static HTML pages
- Static webpage: content delivered exactly as it's stored
  - Dynamic webpage: content generated by web app; it changes; database-driven
  - HTML & CSS are very stable
- GitHub Pages
- Jekyll, Hugo, Gatsby, Next.js



# Wax

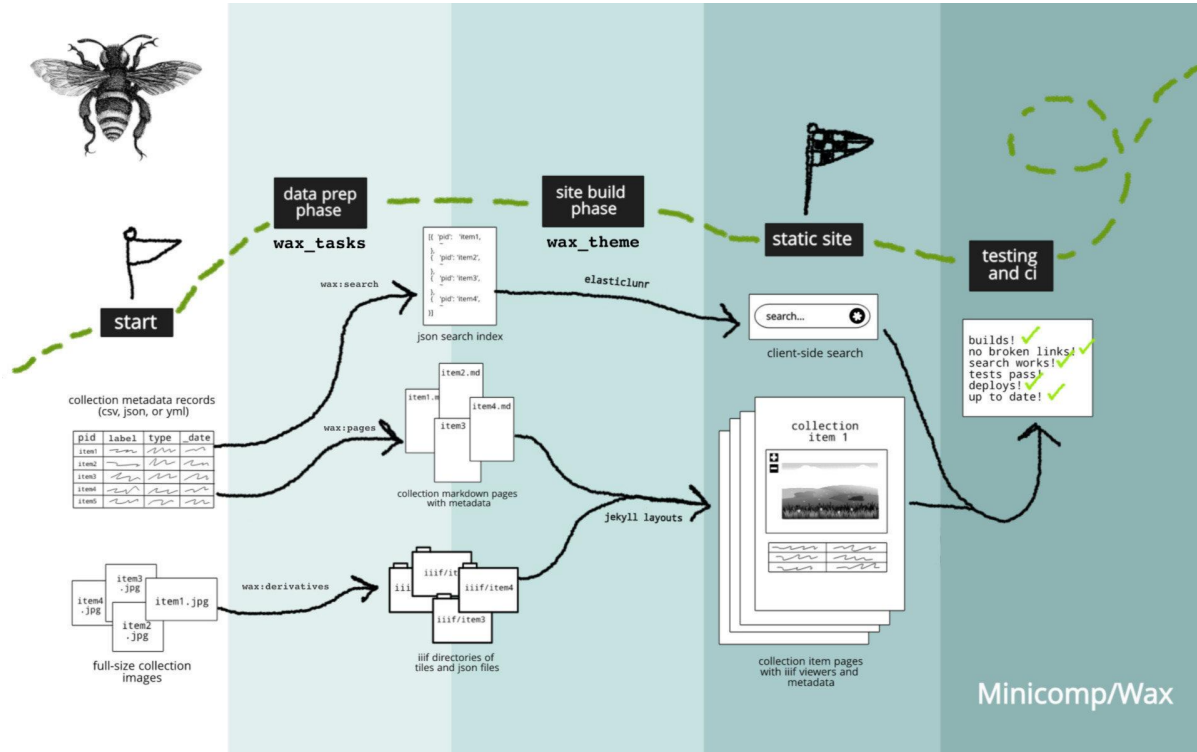
- For creating digital exhibitions with focus on longevity, low costs, and flexibility
  - Combines Jekyll + minicomp principles
- Web framework: a set of tools built to work together for a common purpose

## Browse the Collection



<https://minicomp.github.io/wax/>

# Wax: Workflow



# Wax Examples

- Style Revolution: <https://stylerevolution.github.io/>
- Digital Beehive: <https://kislakcenter.github.io/digital-beehive/>
- Monument Lab: <https://proposals.monumentlab.com/>

# CollectionBuilder

- U. of Idaho Library
- Works with GitHub Pages & CONTENTdm
- Uses lib-STATIC principles
  - Learning tutorials and detailed documentation to create an opportunity with the learning curve associated with static site frameworks

“Our highest hope for this project is to enable a small army of librarians to develop the type of tools and sites that keep the GLAM professionals in control and not subservient to bloated infrastructures and/or third-party contracts.”

<https://collectionbuilder.github.io/about.html>

# CollectionBuilder Examples

- She Changed the World: <https://she-changed-world.cb.ncpedia.org/>
- Oral History (as) Data: <https://uidaholib.github.io/oral-history-as-data/>
  - Voices of Gay Rodeo: <https://www.voicesofgayrodeo.com/>

10-minute break!

# Web-based Computational Environments



# Web-based Computational Environments

- Interactive, cloud-based applications
- Includes executable code and rich text in a single document, along with images.
- Can be easily converted to HTML, LaTeX, PDF, Markdown, Python, and other open standard formats.



# Attributes

- Human readable syntax.
- Simple syntax - it can be learned quickly.
- All components of your work are clearly documented. You don't have to remember what steps, assumptions, tests were used.
- You can easily extend or refine analyses by modifying existing or adding new code blocks.
- Analysis results can be disseminated in various formats including HTML, PDF, slideshows and more.
- Code and data can be shared with a colleague to replicate the workflow.

# Some notes

- **JupyterHub:** A multi-user version of The Jupyter Notebook, ideal for teaching environments.
- **JupyterLab / Notebook and Collab:** A single-user web application for executing and editing Jupyter notebook files.
- **Binder/Hub:** deploys GitHub repo into a collection of sharable interactive notebooks

# How are they being used?

## Teaching and Learning

- Creating and using interactive tutorials
- Learning reproducible workflows and applications
- Learning Markdown
- Use a presentation tool
- Automated grading

Ex:

- [Constellate.org](https://constellate.org)
- [Python Programming for the Humanities](#)

# How are they being used?

## Research and Scholarship

- Linking data and code - > Reproducibility and Storytelling
- Collaborative authoring
- Increased visibility / citation
- Funding agency / journal requirement
- Community expects results from funded projects

Ex:

- Companion to publications: <https://github.com/ElDeveloper/dogs>
- As publication:  
[https://nbviewer.jupyter.org/github/brianckeegan/Bechdel/blob/master/Bechdel\\_test.ipynb](https://nbviewer.jupyter.org/github/brianckeegan/Bechdel/blob/master/Bechdel_test.ipynb)

# Reflections

- What connections do you see among the ARL DSI workshops?
- Do you see opportunities for empowerment in the tools and approaches we've talked about today, or in other sessions this month?

# Resources

- Wikle, Olivia, Evan Williamson, and Devin Becker. “What is Static Web and What’s it Doing in the Digital Humanities Classroom?” *dh+lib*, Special Issue: Literacies in a Digital Humanities Context, 2020, <https://dhandlib.org/2020/06/22/what-is-static-web-and-whats-it-doing-in-the-digital-humanities-classroom/>.
- Sayers, Jentry. “Minimal Definitions.” Minimal Computing: a working group of GO::DH, 2016, <https://go-dh.github.io/mincomp/thoughts/2016/10/02/minimal-definitions/>.
- The Endings Project: <https://endings.uvic.ca/>
- Contellate.org: <https://constellate.org/>