TIND.io Institutional Repository
https://tind.io, **https://info.tind.io/IR**, **Facebook**, **Twitter**

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TIND.io is an official spin-off of CERN, the European Organization for Nuclear Research. CERN is one of the world's largest centers for scientific research. It's also where, in March 1989, Sir Tim Berners-Lee wrote his first proposal for what became known as the World Wide Web. Quite a pedigree!

TIND products are built using the Invenio digital library framework, an open-source technology born at CERN for managing large-scale digital repositories. In 2013, TIND became an official spin-off of CERN, setting its sights on "reimagining library technology" through its suite of four main products:
- TIND ILS: for managing print and electronic resources
- TIND RDM: for capturing and preserving data sets
- TIND DA: for archiving digitized collections
- TIND IR: for managing digital output and work product

This review will focus only on the TIND IR (Institutional Repository) product, which we launched as the Ford Foundation's official internal knowledge repository in early 2021.

Key IR technical facts	Comparable IR products	TIND IR customers
● Fully cloud based ● Coded in Python/C ● Uses Elasticsearch (search) ● MARCXML metadata standard ● Powerful API	● Digital Commons (bepress) ● DSpace ● Islandora	● University of Chicago ● Indiana University ● United Nations ● University of Minnesota ● UC Berkeley

What Is TIND IR?

TIND promotes the IR product to "manage, showcase, and preserve research output." Generally, the IR is suitable for managing and providing access to content that meets certain collection criteria, as defined by the institution hosting the collection. It supports general users quite well, with easy-to-use content submission forms, fast search, some personalization features such as alerts and lists, and a simple, clean, and responsive interface. It's easy to learn for even the most tech-wary users.

The clean and intuitive user experience is supported by administration features—some quite powerful—that you would expect to see in an institutional repository system, including:

- Robust, customizable MARC-based cataloguing module
- Authority records support
- Fully customizable multistep workflows (e.g., for content submission and review)[1]
- Customizable results display[2]
- Support for multiple content formats
- Batch metadata editor that enables users to preview changes before committing them
- A powerful API
- Detailed access management (at record/collection levels)
- Support for single sign-on (SSO)
- Scalable technology for ease in managing collections of all sizes
- Site-, collection-, and record-specific analytics[3]
- OAI-PMH metadata harvesting[4]

TIND at the Ford Foundation

The Ford Foundation is a private foundation that supports people and organizations advancing justice, fairness, and human dignity around the world. Through its eighty-five-year history, the foundation has committed to preserving its historical records and making those records available over time to tell the story of our work and operations, to reflect on and learn from our past, and to share that knowledge with others. Our open archival collections (physical and soon digital) are housed and preserved at the Rockefeller Archive Center in Tarrytown, New York, where they are available for researchers and historians.

As with many organizations, the evolution of the digital workplace presented the foundation with challenges in capturing, organizing, and sharing our current records and institutional knowledge. Over the past fifteen to twenty years, my team has taken custody of terabytes of digitized and born-digital records. Tens of thousands of additional assets were stuck in individual staff and team drives. As part of an end-to-end process for securing and processing these digital records, we needed a solution for storing, describing, curating, and making them available to staff. Enter the TIND IR.

We began our roughly six-month development engagement with TIND in 2020 and launched the repository in January 2021. Using the powerful TIND API, we successfully integrated our historical ontology (maintained in Semaphore) so that

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[1] Customization requires engagement with the TIND professional services team to develop.
[2] See Note 1.
[3] The Ford Foundation has not yet made use of these features in our implementation.
[4] See Note 3.

we can populate authority fields in TIND with authorized terms. This was the first integration of this type for TIND. We are thrilled with the results and look forward to enhancing this integration in the future.

Our TIND Instance

The following screen captures show elements of the TIND interface, as implemented for the Ford Foundation.

The **Search** function is easy and intuitive. From the home page search box (Figure 1), users can either enter a term and click the Search button or they can leave the field empty and click Search to see all records. TIND accepts Boolean operators and enclosing a phrase in quotes narrows a search.
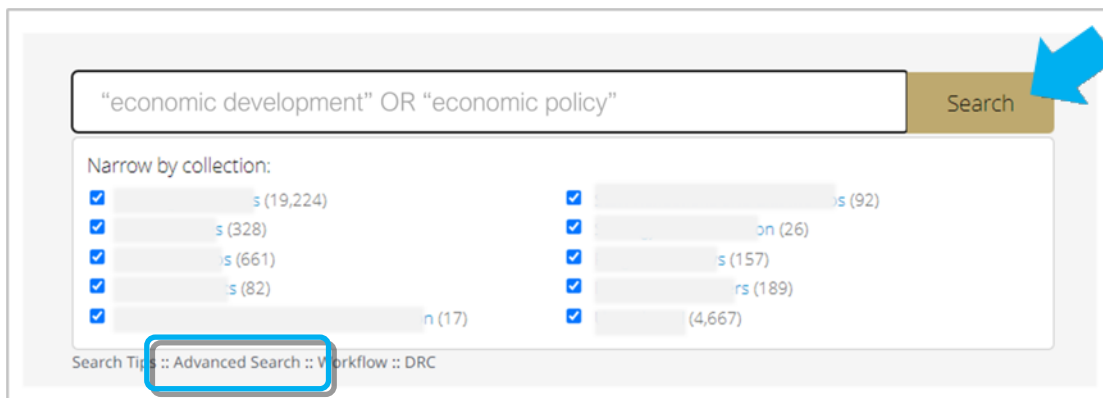
Figure 1. Main search function of TIND IR (Source: home page of the Ford Foundation's institutional repository, which is restricted for access by internal staff only.)

The **Advanced Search** guides users in creating more sophisticated queries. One feature that we at the Ford Foundation find of questionable value is the "Added/modified since" field. Because our repository contains thousands of documents migrated from other systems, the "Added/modified since" date (Figure 2) is the date of the migration—not the actual publication date of the record. Users can use the basic search field for date searches, but they must be aware of TIND search syntax to do so. For example, a search for `year:1974` will yield results for documents with 1974 in the publication date field. TIND search syntax is well documented but not completely intuitive to the casual user.

Figure 2. Advanced search function of TIND IR, accessed by clicking the link indicated in Figure 1 (Source: Ford Foundation's institutional repository)

TIND offers other robust features for **Filtering** and **Sorting** to help narrow down a results set. Figure 3 shows how the foundation uses facets (populated with terms from our ontology) to help users narrow search results by selecting one or more terms organized into broad categories. Facet terms are displayed in order of frequency so users will see the most relevant terms at the top of the list. Because the filter panels can display only up to 500 values, we typically advise our users to add terms to their search queries rather than browse for them in the side panels, which can be unwieldy.

Figure 3. Results set with facets in TIND IR (Source: Ford Foundation's institutional repository)

TIND allows users to sort by various values, like relevance, latest first, author, title, and year (Figure 4).

Figure 4. TIND IR sorting and display features (Source: Ford Foundation's institutional repository)

Users also can view and export results in several formats (HTML, BibTex, Dublin Core, EndNote, MARC, MARCXML, MODS, NLM, Refworks) to share bibliographic data with other reference systems (Figure 5).

Figure 5. TIND IR export formats (Source: Ford Foundation's institutional repository)

Clicking on a thumbnail preview (shown in Figure 3) opens the document in a new browser window. Clicking on the document title opens a detailed view (Figure 6) where users can view or download the document, add a document to a personalized basket or list, read the abstract (if available), and review descriptive metadata for the document. From this view, administrators also can access the **Record Editor** to edit the bibliographic record in a MARC template.

Another useful feature in the detailed view (Figure 6) enables users to click on a linked metadata tag to go to a new results list containing documents tagged with the same term.

Click a tag to see other records with that tag.

Figure 6. Detailed record view in TIND IR (Source: Ford Foundation's institutional repository)

While the **Record Editor** (Figure 7) enables an administrator to update a single bibliographic record, the powerful **Batch Editor** (Figure 8) enables administrators to add, delete, or update metadata fields and to preview any changes before submitting them. This allows administrators to make bulk edits to metadata values, changing thousands of records in a matter of seconds. The preview feature means that administrators can get a glimpse of the proposed changes before executing them. The TIND interface highlights these changes so they are easy to spot and quantifies how many records and MARC fields will be affected by the change. Another advantage is that the Batch Editor allows administrators to select which MARC fields to include, so that the metadata preview isn't overloaded with unnecessary values, but rather streamlined to emphasize the relevant fields.

Figure 7. TIND IR Record Editor (Source: Ford Foundation's institutional repository)

Figure 8. TIND IR Batch Editor (Source: Ford Foundation's institutional repository)

One Year Later

It's been one year since the Ford Foundation's launch of TIND, and we are thrilled with the positive user response. Even though our launch was fully remote due to the COVID-19 pandemic, it has been easy to train and support users. We continue to witness staff success in using the repository.

There are some functional (mostly administrative) enhancements we wish for. TIND is a small (but growing) company with a maturing business model. TIND's twelve- to eighteen-month development road map is packed with new development projects, functional enhancements, and customizations, making it difficult for the small development team to pivot, which lengthens the timelines for enhancements and new functionality.

That said, the TIND team has been open to feedback on how to improve services and functionality. They are attentive and responsive, especially when it comes to serious bugs and access issues.

Additional Things to Consider

Pricing. While developed on an open-source framework, TIND is a full-service commercial product. There is an annual licensing fee, plus one-time implementation fees that are based upon:
- Collection size
- Complexity of data and file migration
- Levels of integration and customization required
- Length of contract commitment

Pricing includes hosting, maintenance, version upgrades, and new feature releases. TIND customers are supported by an expert help desk and professional services. Annual professional service hours packages are available for customizations.

The company. TIND is a small but growing company with a product development team of ten. They are scaling up their operations to support their expanding customer base (fifty-four institutions at the time of this writing). They have key team members in both Europe and the United States.

ADA compliance. Per TIND, the company is committed to ensuring the accessibility of its products according to Web Content Accessibility Guidelines (WCAG) v.2.1. To achieve WCAG 2.1 Level AA compliance, TIND has prioritized improvements to contrast for graphics and UI components.

Conclusion

To conclude, I offer a summary of top strengths and shortcomings, as provided by my team at the Ford Foundation:

Strengths
- Clean, intuitive user interface with ability to add custom branding
- Simple, powerful search
- One-click access to documents
- Powerful batch editing features that are easy to work with
- Relatively smooth implementation process (on time and within budget)

Shortcomings
- Inelegant administrative interface
- Significant changes to collections, structure, workflows, and labels require assistance from TIND
- No current way to export large numbers of documents (This is on TIND's road map.)
- Administrator training was cumbersome and not well-timed (provided too far in advance of launch, making it difficult to remember)

Further Reading
- Breeding, Marshall. "Library Technology Guides: Company Directory: TIND." Accessed on March 31, 2022, https://librarytechnology.org/vendor/tind.
- Breeding, Marshall. "Library Technology Guides: Document Repository: TIND Technologies and Invenio: A New Model of Automation for Research Libraries." August 2015, https://librarytechnology.org/document/21456.
- Enis, Matt. "News: Academic Libraries Implement New ILS, IR Developed by CERN." June 1, 2017, https://www.libraryjournal.com/story/academic-libraries-implement-new-ils-ir-developed-by-cern.
- Enis, Matt. "News: UC Berkeley Law Library Implements TIND ILS." August 23, 2018, https://www.libraryjournal.com/story/180823-UC-Berkeley-Law-Library-Implements-TIND-ILS.