

Work and Implementation Plan

Technical Overview

EvoluData specializes in creating enterprise Open Source solutions using WikiSuite, an integrated and extensible solution comprised of a number of Open Source components, to address key challenges faced by today's organizations.

**Open Source
Solutions**



**Award-Winning
Software**



**Configurable
& Flexible**



**Premium
Support**



**Customized
Solutions**



**Goal-Driven
Approach**

Of the WikiSuite components, for the scope of Research Administration System, the most important is Tiki Wiki CMS Groupware. Tiki is “Free, Libre and Open Source” software that has been actively developed since 2002. A very mature solution, its source code has been contributed to by more than 300 developers over its history.

Tiki Components Overview



Advance User groups & Access Control



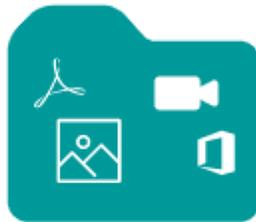
Customized Web Application (Tiki Tracker)



Public and Protected Content Pages (Wiki Pages)



Reports and Dashboards



Shared & Protected File Galleries



Workflow Automation



Email Alerts and Notifications



Extensive search and listings



Multi-lingual



Tracker Comments



PDF Exports



Slideshows

Tiki Trackers Introduction

Tiki Trackers (or "Trackers") are the "database" component of the [Tiki](#) collaboration web platform. With Trackers, web forms can easily be built for data collection and for reports or displays of the collected data. Trackers are fully configurable and flexible, capable of creating an advanced and powerful web application.

Trackers, like all components of the application, are web-based and accessible from any operating system and device within your network or over the Internet. Trackers have many features that make them one of the best Open Source applications for building database web applications and improving organizational performance. For an overview and more details, please visit tikitrackers.org.



Key Tracker Features:

 <p>Data Structure More than 40 field types are available, such as dropdown selector, mathematical calculation, dynamic items list.</p>	 <p>Data Relations Relationships can be created between multiple data structures to link them.</p>	 <p>Collaboration Data can be assigned to multiple users for collaboration.</p>
 <p>Logging All user activity on data is logged for security and to revert changes if required.</p>	 <p>Notifications Assigned team members and administrators receive alerts upon changes in data.</p>	 <p>Permissions Extensive permissions allow users to view, edit or delete data.</p>
 <p>Import/Export Data can be imported from or exported to other systems using the standard CSV data format.</p>	 <p>Search Powerful search and filters are available to find data whenever required.</p>	 <p>Reports Data can be visualized with charts, pivot tables, calculations, etc.</p>

Trackers Implementation in Project

The system will make extensive use of the built-in features of Tiki. Along with wiki pages, Trackers are one of the most powerful features of Tiki. Each Tracker functions as a data repository, capable of holding a large number of records. Moreover, relationships can be defined between Trackers to eliminate data redundancy (repetition) and build analytical reports over data.

Trackers give users full control to create customized, highly flexible web applications with little or no programming knowledge. The data input and storage will be handled via Trackers, while wiki pages will be used to display reports, formatted data, input forms, and customized dashboards for system users.

Tiki has a very strong permission management system, starting at the global level, progressing to the group/user level, and to the object level, via configurable parent-child permission inheritance. Even a single item ("piece of data") can be access-controlled. For maximum data security and integrity, the proposed system will rely heavily on this built-in permission and categories infrastructure.

Wiki Pages, Permissions, and More

Power of Wiki

Collaborative Knowledge Management

Wikis are well known for their ability to facilitate collaborative knowledge management. The wiki capabilities of Tiki enable users to create content pages that can be interlinked via structures (hierarchical sets), as described below. Tiki's page editor supports both WYSIWYG and wiki syntax (text-based) editing, with commonly used formatting actions available in toolbars.

History Tracking

Wiki pages can be edited by multiple users. The complete version history of updates is maintained, so any user with the appropriate permission can compare and roll back the page contents to any previous version if necessary. (Page rollbacks create a new page version, so no content is ever actually lost.)

Multilingual

Tiki supports multiple languages both in the interface and the content; one Tiki instance can host wiki pages in different languages simultaneously, and page translations can be tracked and kept synchronized.

User and Group Management

Tiki excels at role management by means of an extensive user-/group-based permission system. Each Tiki user group is assigned permissions. When a user is assigned to or joins a group, he or she inherits that group's permissions. Admins can assign, update, and revoke group permissions for every section and object, which means data integrity is maintained and secured in a fine-grained manner. Each Tracker item can have view permissions to control which users can access it. Data (in the form of wiki pages, Tracker records, and other data items) can be organized within different categories and structures.

Categorization and Structures

Wiki pages can be organized in a hierarchical set that we call a structure. Navigation aids are automatically created to help users move through the structure. Structures are the fastest way to create a set of wiki pages

quickly in a hierarchy and are a great tool for creating documentation.

Tiki Plugins and Modules

Tiki has numerous integrated plugins (not to be confused with third-party plugins and their associated vulnerabilities, etc.), which means that to accomplish common tasks, the user doesn't need to rely on outside code. Tiki plugins and modules make setting up pages and organizing sections very easy. They help in data formatting, integrating Tracker data (from the "database" component of Tiki), displaying reports, and many other functions.

Related Tiki functionality also supports **simple and complex mathematical calculations** performed on Tracker fields, as well as applying **logic functions** on data, for quick decision-making. The output can then be displayed in sortable and filterable tabular data.

Modules, in Tiki terminology, are content boxes that can display various types of information helpful for users, contain menus and navigation shortcuts, list most-recent modifications, display online user information, and more. Modules are commonly used to display data, content, or information in the page header or footer or in a left or right sidebar, or to configure the layout of a wiki page. Permissions can also be assigned for modules, just like for wiki pages and every other object in Tiki, which means that different users can get unique information and page presentations based on their permissions or group memberships.

Notifications and Alerts

Tiki has a fully configurable email alerts mechanism associated with Tracker item creation, modification, and deletion. This means that relevant users will receive a notification whenever there is no event activity, project details modification, project status change, and any other update.

Additional alerts can be easily configured via the [ListExecute plugin](#) (created with wiki syntax) and Tiki Scheduler; the combination of these two allows sending a notification when a certain condition is met; for example, a notification can be sent whenever an event date is approaching.

Dashboards and Reports

Tiki has very advanced features for data presentation in tabular format, filterable lists, pivot tables, various visual charts, and more. Tiki's support for pivot table integration enables creating complex visual reports on the fly via a drag and drop interface to present information from Tracker fields. As mentioned above, reports and listings can be embedded within access-controlled wiki pages for detailed analysis and monitoring purposes.

The reporting feature can be used to build powerful and extensive dashboards for system administration and power users.

PDF Publishing

Tiki comes with strong integration of mPDF, an Open Source PDF generation system ([with over 9.5 million downloads](#)), which makes exporting and sharing wiki page content, including reports and data lists, very easy. A PDF file generated by Tiki can be bookmarked, password-protected, and exported in multiple orientations and page sizes with customized header and footer text, and so on.

Workflow Diagrams

The Diagram plugin is a strong integrated feature based on Draw.io. This plugin can be a very helpful tool for users to **create model workflows** since it enables users to create illustrations, workflow diagrams, flowcharts, and much more within the wiki page; all created diagrams are editable as well as printable in the PDF version of the page.

Slideshow Presentations

Another feature of Tiki is that any wiki page can be displayed as a web-based slideshow presentation, featuring multiple built-in themes, autoplay, transition styles, and much more. Both PDF publishing and auto-slideshow creation are useful tools to make knowledge sharing and presentation easier for the team involved.

Other Built-in Features

Apart from the above-mentioned capabilities, Tiki has around a hundred fully developed and integrated features. Among these are:

- Event calendars
- Polls and surveys
- Article publishing
- Blogs
- Forums
- Directory
- File galleries
- Newsletters
- XMPP chat client
- FAQ and more...

Functional Overview

Tiki is a highly flexible and customizable system with a wide range of built-in modules and native plugin options. Flexibility is a core focus to encourage both collaboration and interoperability. The flexibility is granular, allowing near-infinite combinations of configurations and settings from the end-user level to the developer level.

With all features sharing a Graphical User Interface (GUI), adding new segments, building new reports, setting up user permissions and other administrative configurations do not require any programming knowledge.

Main Components of the System

Our project manager and business analyst team will work closely with the University administration to configure and customize Tiki deployment that will best suit their business needs and knowledge management requirements.

As explained above, Trackers, wiki pages, and hundreds of already available modules make it possible for our team to swiftly develop and deploy tailored web applications for any industry. From the RFP and research, we have identified the following major modules of the system.

Users and Groups Management

From the requirement document, we have assumed that there will be four different levels of users in the system, the exact level and type of permissions granted to this group will be discussed and finalized during the next detailed analysis phase of the project.

1- Requestors (Normal Users)

These users will have limited access to data; they will only be able to submit their requests and track application status, generate reports, and other limited functions in the system.

2-Fulfillers (Business Users)

System managers will have create/edit and view access to all research funding requests, documentation, and reports related to their associated content.

3-Stakeholders (Power Users)

Will have complete access to all information, will be able to approve funding, and create reports to track progress.

4- System Admins (Technical users)

System admins will have full access to all data and control panels of the system.

Research Management

Research management will be the most important component of the system since whole system will be planned around the smooth workflow and working of this component. All user levels will have direct interaction

with this component.

Research management data structure (implemented as a Tracker), will be the main repository of the system and all other sub-Trackers will be related. As mentioned above, Trackers can hold any type of data (40+ field types) with defined inter-relationships.

While Requestors will be able to enter data (in the form of Tracker items) and the only view their initiated research funding request, other users including fulfillers and stakeholders will have extensive access across the research component.

Detailed description, funding status, and other information will be stored within main research Tracker. Some of the other important sub-Trackers related to the research component will be:

- Funding sources Tracker
- Status Tracker
- Research types Tracker
- Industry partners Tracker
- Grant types Tracker

Lists, reports, and other data operations will be performed via the components defined below.

Research Knowledge Management

As additional functionality, Requestors will be able to create associated research reports and share knowledge related to research requests. The powerful wiki capabilities of Tiki make it an ideal solution for a collaborative knowledge management tool. Hundreds of Tiki deployments are already in place at organizations including educational institutes for management of content and collaboration.

Some other components of Tiki related to knowledge management are:

- Powerful formatting tools
- Extensive file galleries
- Hundreds of plugins to display media including videos.

and more.

Searching, Analysis, and Reports

Visual Analytic Reports

We understand that timely and accurate visual analysis is crucial for all decision-makers, managers, and stakeholders. We are confident that Tiki is fully capable of meeting the data visualization requirements of this project.

Tiki has an extensive and powerful Pivot Table plugin for data visualizations, which is capable of generating

tables, heat maps, bar charts, box plots, area charts, histograms, and others based on Tracker data. For details please visit <https://doc.tiki.org/PluginPivotTable>.

The Tracker Calendar plugin will also be used for report generation. It allows managing Tracker items as resources while displaying them in calendar views or calendar event lists. See <https://doc.tiki.org/PluginTrackerCalendar>.

Tiki also includes a new Gantt Chart plugin. It is not yet as mature as the others, but it will improve over time, and if it's a priority for the project, we can provide estimates for enhancing it. See <https://doc.tiki.org/PluginGanttChart>.

On-Demand Access

Tiki has extensive search capabilities, that include search filtering on:

- Entire site: All pages, files and Tracker data
- Wiki pages: page name, description, data
- Tracker items: title, fields and description
- Files: name, description, search data (data produced by the converter)
- Comments: title, data (and summary for Tiki search)

We understand that search is a critical part of every data-driven web application. That is why we have integrated Elasticsearch natively in Tiki. Elasticsearch is a leading Open Source enterprise search application. It provides advanced indexing and extremely fast search capabilities for web applications by using a distributed, multi-tenant-capable full-text search engine with a RESTful web interface and schema-free JSON documents.

Also, we have strong built-in plugins that allow custom data search forms and filtering data based on title, content, date, category and more.

Tiki includes file previews (for example, to preview a Microsoft Word file without downloading it), full-text search (<https://doc.tiki.org/Search-within-files>) and optical character recognition (OCR) (<https://doc.tiki.org/OCR-Indexing>).

Notifications and Alerts

Tiki has a fully configurable email alert mechanism associated with the creation, modification, and deletion of Tracker items (as well as other content). This means that relevant users will receive a notification whenever there is a new activity, details modification, status change, and any other update.

In addition, any stakeholders and fulfillers will be notified about any pending action required.

Additional alerts can be easily configured via the ListExecute plugin and Tiki Scheduler; the combination of these two allows sending a notification when a certain condition is met. For example, a notification can be sent whenever an event date is approaching. For more technical details, see <http://doc.tiki.org/PluginListExecute>.

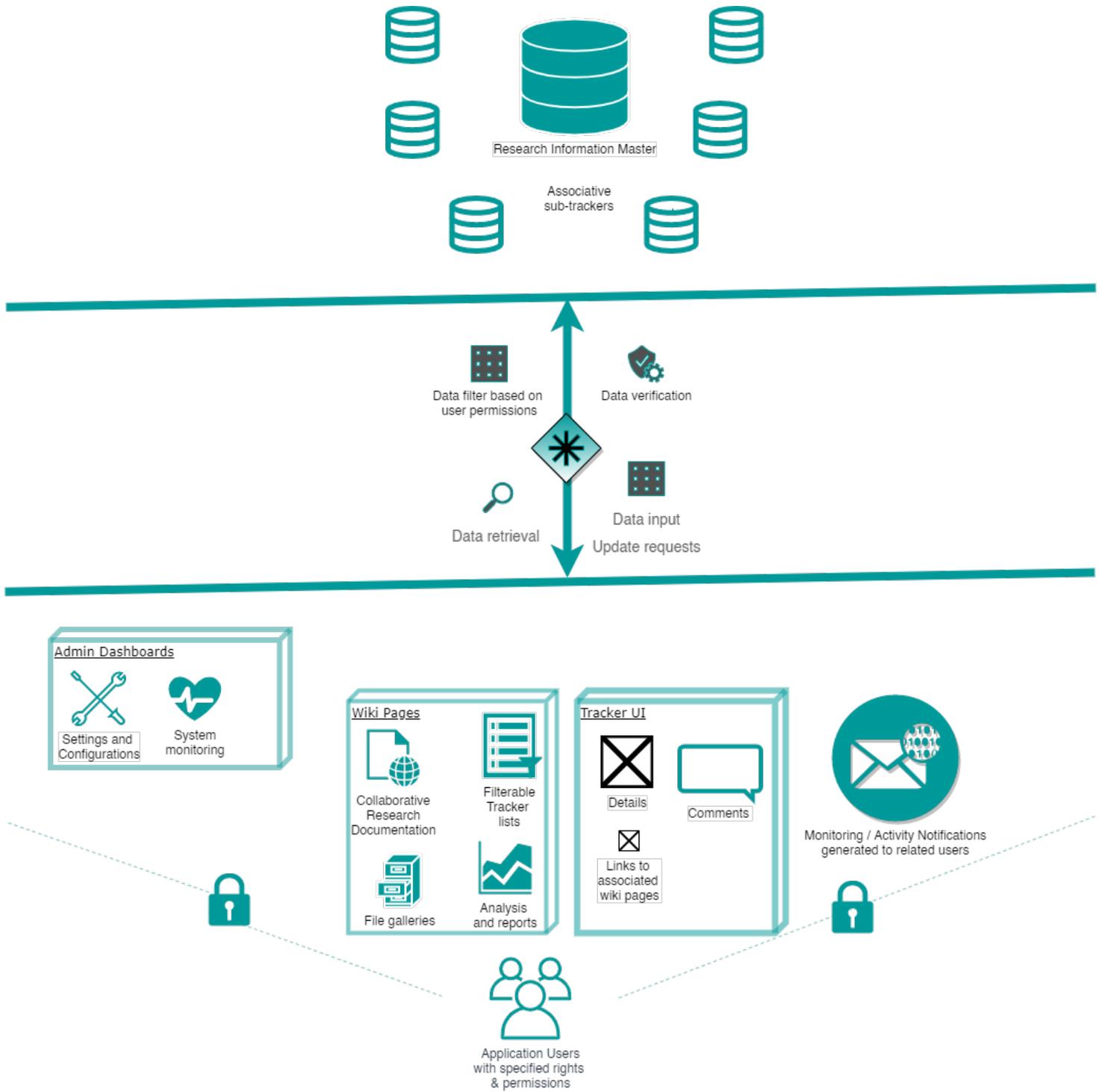
Workflow and Diagrams

With a very strong inter-relationship system already built into Trackers, it is easy to deploy associated and interlinked master and sub-Trackers, to define any type of workflow, for monitoring and tracking associated activities and data updates.

Diagrams

Tiki Diagrams is one of the strong integrated features, powered by the Open Source Draw.io project. Diagrams can be a very helpful tool for users to create model workflows since it enables users to create illustrations, workflow diagrams, flowcharts and much more within the wiki page; all created diagrams are editable and are printable as the PDF version of the page.

System Deployment Overview Diagram



Approach to Version Upgrades



Tiki releases a major version every eight months, and every third major version is a Long-Term Support (LTS) version. LTS versions are supported for five years after their release. Minor versions for bug fixes and improvements of existing features are released whenever required.

Version	Release of x.0	End of Life
16.x	2016-10	at the release of Tiki 17.1
17.x	2017-07	at release of Tiki 18.1
18.x LTS	2018-01	2023-01
19.x	2018-11	at the release of Tiki 20.1
20.x	2019-06	at the release of Tiki 21.1
21.x LTS	2020-03	2025-03

Impact of Version Upgrade

All Tiki features are built in and no third-party plugins are required to achieve the functionality of the web portal. This makes Tiki much more stable and secure than CMS platforms that depend on third-party plugins for the implementation of their features. Also, Tiki front end templates and visual themes are independent of website functionality and so the website look and feel can be preserved in an upgrade. Any new features or enhancements of the existing features required are done in the system core and added to the library of the platform. Finally, as mentioned earlier, the EvoluData team members are also core contributors to Tiki so they best understand the system architecture and features.

Anticipated Implementation Timeline

Description	Tentative number of hours	Week
Business Analysis	100 Hours	Week 1 - Week 3
Dev Server Setup	20 Hours	Week 2
System Implementation	300 Hours	Week 4 - Week 10
System Enhancement	150 Hours	Week 11 - Week 12
Theme Design	40 Hours	Week 4 - Week 6
Theme Deployment	60 Hours	Week 6 - Week 8
Testing and Fixing	80 Hours	Week 12 - Week 16
Migration to Production	60 Hours	Week 16 - Week 20
Grand Total	810 Hours	5 months