Fundraising Innovations Wiki Documentation

Release 1

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CONTENTS:

CHAPTER

ONE

USAGE

1. Clone the package from GitHub to your chosen directory.
2. Make sure you have Python 3 installed and configured to be accessible by default or with a python3 command.
3. Install required dependence packages by running:

   ```
   pip3 install -r requirements.txt
   ```

4. Configure your user profile file:
   - the script assumes that passwords to the Wiki and the personal Airtable api key are stored in the user bash profile as environmental variables
   - in order to save them as such, open your bash profile file and add the following lines at the bottom:

     ```
     export DOKUWIKI_PASS=your_key
     export DOKUWIKI_PASS_TEST=your_key
     export AIRTABLE_API_KEY=your_key
     ```

   - your_key for the DOKUWIKI entries are the keys that you use to access the official and test wikis
   - to get your Airtable API key, follow these instructions
5. Configure the settings in `config.json` file (located in the package top folder), namely:
   - the package can push content to the official Wiki at `innovationsinfundraising.org` or a local version of it (if you have one set up – instructions on how to do this go beyond the scope of this manual)
   - pushing content requires providing login information to be used to access the Wiki – `config.json` is a dictionary that stores that information
   - **username** is the user login name to access the Wiki
   - **password key** is the key that refers to the key in the user profile file that stores password to access the Wiki; if you followed point 4 above, you do not need to change anything here
   - **wiki url** is the address of the Wiki; you have to change this only if the official Wiki moves or you want to set up your own local version
6. Configure the remote API setting in the Wiki configuration manager:
   - go to Admin –> Configuration Manager –> Authentication –> remoteuser
   - add your user name in the field provided
7. Run main.py with appropriate parameters (see examples below):
   - **wiki version** can be set to ‘official’ (the one publicly accessible) or ‘test’ (the local version if set up)

- **table name** is the name of the table in the Airtable database you want to use (this needs to be exactly the same name as in Airtable, case-sensitive)
- **mode** can be set to 'create' or 'update' depending on whether you want to create a new resource from scratch or update an existing one
- **resource type** can be set to 'table', 'pages' or 'both' depending on whether you want to use the Airtable table to build a table, a set of Wiki pages or both

The instructions above will set up the environment and allow you to create or update tables and pages based on the content stored in Airtable tables. It will only work, however, for those tables that have been already defined in the package, i.e., for which it has been defined where the content will be published and in what format. It is recommended to first become comfortable with this process before proceeding to the more complex functionalities of the package.

In order to define the format for new tables and publish them on the Wiki, please follow the Development guide.

1.1 Examples

Create a Tools table from scratch and push it to the official Wiki:

```
python3 main.py official Tools create table
```

Update a set of pages that have been previously published on the official Wiki based on the Tools table:

```
python3 main.py official Tools update pages
```

Create a Papers table and a set of pages and push them to the local test Wiki:

```
python3 main.py test papers_mass create both
```

CHAPTER

TWO

AUTOMATIC UPDATING

In order to perform regular maintenance, a different script has to be run as follows:

```
python3 update_all.py
```

This will check all the defined tables for updated records and update the table published on the Wiki, as well as associated pages. It will also perform a within-database maintenance. Currently this is implemented only for filling in bibliographic details in the Papers table.

The updating script is run automatically on the server every Sunday. Therefore manual maintenance is no longer required but can be performed when needed.

CHAPTER

THREE

DEVELOPMENT

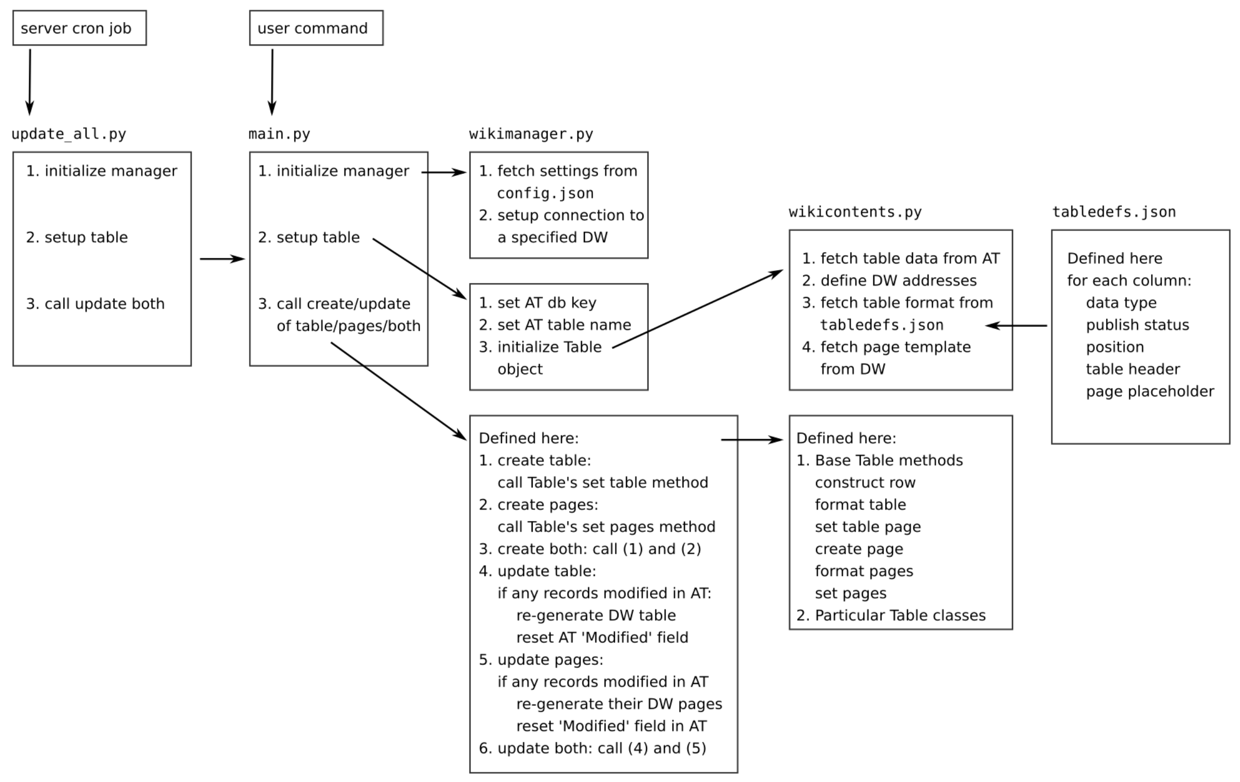
This package provides a way to connect Airtable (AT) as a GUI database and DokuWiki (DW) as a content presentation system. This is done through developing interfaces between particular AT tables and particular DW pages. A number of such interfaces have been implemented and can be kept up to date via the top-level scripts of this package, i.e., `main.py` and `update_all.py`.

Developing a new interface requires several steps described in detail in this section:

1. Understand package structure.
2. Try out default settings for a new table.
3. Define a new table format in `tabledef.json`.
4. Define a new table class in `wikicontents.py`.
5. Define a connection to the new class in `wikimanager.py`.

3.1 Package structure

This image gives a schematic representation of the 3 scripts included in the package:


server cron job
user command
update_all.py
1. initialize manager
2. setup table
3. call update both
main.py
1. initialize manager
2. setup table
3. call create/update of table/pages/both
wikimanager.py
1. fetch settings from config.json
2. setup connection to a specified DW
1. set AT db key
2. set AT table name
3. initialize Table object
Defined here:
1. create table: call Table's set table method
2. create pages: call Table's set pages method
3. create both: call (1) and (2)
4. update table: if any records modified in AT: re-generate DW table reset AT 'Modified' field
5. update pages: if any records modified in AT re-generate their DW pages reset 'Modified' field in AT
6. update both: call (4) and (5)
wikicontents.py
1. fetch table data from AT
2. define DW addresses
3. fetch table format from tabledefs.json
4. fetch page template from DW
Defined here:
1. Base Table methods construct row format table set table page create page format pages set pages
2. Particular Table classes
tabledefs.json
Defined here for each column: data type publish status position table header page placeholder

3.2 Defaults

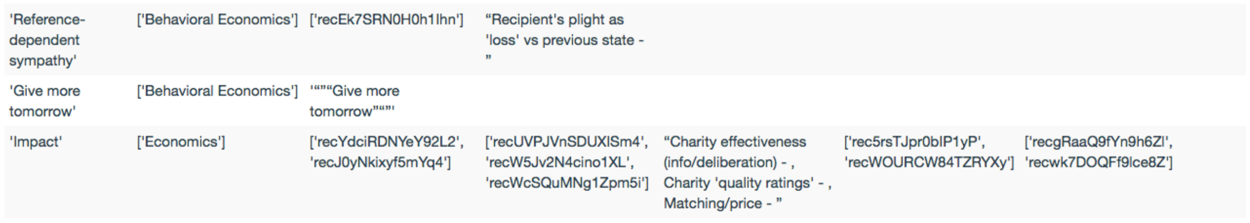
The first step in constructing a class for a new table is to display its content using the default formatting included in the base Table class. For every AT table there is in principle a possibility to push it to DW (1) as a table, such as the tools table or (2) as a set of pages, where each page is based on information contained in a single row of the AT table. For instance, see this page based on one of the rows in the tools table.

When pushing a new table to DW the default settings will simply put all the information contained in the table in either the table or a pages format. The former will be published on IIF tables:test page while the latter on IIF test:test_page page. Once these test pages are published, you can see the default formatting and try to understand how it can be improved to achieve a desired look.

As an example, let's imagine we wanted to publish a Theories table as a table and a set of pages, where each page describes a single theory. We need to run the following:

```
python3 main.py official Theories create both
```

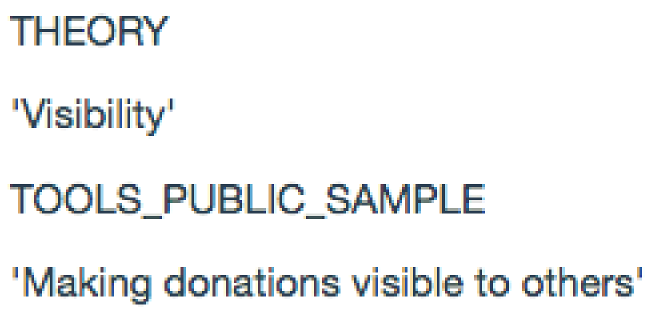
Now, if we go to the 'tables:test' link mentioned above we will see something like the following:



'Reference-dependent sympathy'	['Behavioral Economics']	['recEk7SRN0H0h1lhn']	"Recipient's plight as 'loss' vs previous state - "			
'Give more tomorrow'	['Behavioral Economics']	'""Give more tomorrow""'				
'Impact'	['Economics']	['recYdciRDNYeY92L2', 'recJ0yNkixyf5mYq4']	['recUVPJVnSDUXISm4', 'recW5Jv2N4cino1XL', 'recWcSQuMNg1Zpm5i']	"Charity effectiveness (info/deliberation) - , Charity 'quality ratings' - , Matching/price - "	['rec5rsTJpr0bIP1yP', 'recWOURCW84TZRYXy']	['recgRaaQ9fYn9h6ZI', 'recwk7DOQFf9lce8Z']

The information that is placed in the table is not ordered, formatted or interpreted by default.

The same principle holds for a default page. It will print a given row as a set of lines in which column names written in uppercase alternate with the content of those columns. Such as this:



THEORY

'Visibility'

TOOLS_PUBLIC_SAMPLE

'Making donations visible to others'

3.3 Defining table and page format

The ugly defaults described in the previous section are caused by the way content is stored in AT tables and fetched by its API. Namely, all records arrive as a list of records. Every record in that list is a dictionary with 3 keys:

- 'id': unique record id
- 'fields': a dictionary with keys that correspond to column names and values that are whatever is stored in that row in those columns
- 'createdTime': the time the record was created (there is no way to access when it was last modified)

Therefore, assuming we have initialized the Theories table and stored it in a variable 'table', in order to get the content of, for instance, the 'Theory' column of the first row that got fetched, we would need to execute the following command:

```
theory_name = table.records[0]['fields']['Theory']
print(theory_name)
```

If for a given row some column in the table is empty, it is not fetched by the API. For the filled columns, the type of entity returned depends on the column type in the AT table. For instance, short and long text will be a string, multiple select – a list of strings while linked records – a list of ids for records in a linked table.

In order to turn such raw fetched records into a meaningful presentation on DW, you need to start by creating format definitions for table and pages in the `tabledef.json` file. This file is a dictionary with the following structure:

```
"TABLE NAME": {
  "COLUMN NAME": {
    "type": "COLUMN TYPE",
    "table": {"publish": PUBLISH?, "pos": DESIRED POSITION, "header": "TABLE HEADER"},
    "page": {"publish": PUBLISH?, "pos": DESIRED POSITION, "placeholder": "PAGE␣
↪PLACEHOLDER"}
  },
```

where TABLE NAME is usually the name of table in the AT. The exception to this is when the same table in the AT serves different tables on DW. In that case the name should be the one that identifies the correct class for that table in the `wikicontents.py`.

For instance, a single papers_mass table in AT is presented as a descriptive content on DW as well as quantitative meta-analysis content on DW. These are generated by two separate classes PapersTable and MetaAnalysisTable in wikicontents.py respectively and are defined as papers_mass_qualitative and papers_mass_quantitative in the tabledef.json.

Further, COLUMN NAME is mostly the name of the columns in the AT and COLUMN TYPE is the type of the data in that column, such as "Single line text", "Checkbox", "Multiple select" etc. Since sometimes the content that appears on DW is richer than data contained in AT columns, there is a number of special COLUMN TYPES that will be described below.

The remainder of information for each column is organized in two dictionaries: "table" and "page" that define the format for DW tables and pages. For each of these, you need to specify whether the column will be published (choose value from true or false) and in which position (choose number). This allows for a flexibility in deciding which content from the AT table will go into a DW table format and which in the associated pages. For clarity it is advisable to set "pos" to 0 whenever "publish" is set to false. Specifying the position will ensure that the header and the rows will appear in the same order (and the same for placeholders in a page).

Finally, for "table" you need to specify the TABLE HEADER, which is simply the text that will appear on top of the DW table for that column (which does not need to be the same as the title of that column in AT). For the "placeholder" in "page" dictionary, you need to insert the placeholder text that will define where the content from that column will go whenever it is pushed as a DW page (see below).

As an example, this is a beginning of the definition for the Tools table:

```
"Tools": {
  "Tool name": {
    "type": "Single line text",
    "table": {"publish": false, "pos": 0, "header": "Tool name"},
    "page": {"publish": true, "pos": 1, "placeholder": "TOOLNAME"}
  },
```

We can see that the content of the "Tool name" column will not be published in the DW table but will be published on the DW page in the first position and will replace the TOOLNAME placeholder.

Now, if the DW table and pages will contain exactly the same information as that present in AT, filling in the tabledef dictionary with simple column types is sufficient. The script will then take care of formatting everything appropriately. An example is the effective_charities_rated table whose columns are mostly text and checkboxes. It contains one column that is of type "Link to another record". Whenever the column is of this type, you need to specify the column name from the linked table that you want to display in the table. For instance, if some table contains a linked record to the Tools table, we will probably want to display the name of that tool and therefore need to insert "Tool name" under "linked_column_name". For effective_charities_rated, this looks like:

```
"rated_by": {
  "type": "Link to another record",
  "table": {"publish": false, "pos": 5, "header": "Rater",
  "linked_column_name": "Rater"}
},
```

because we want to display the name of the rater which is stored in column called "Rater".

Sometimes the information presented in DW table is a combination of information contained in different columns in AT. For instance, the descriptive DW representation of the papers_mass table contains a link to paper pages, a link to the associated tools and a link to paper full text:

```
"papers_mass_qualitative": {
  "PaperPage_Parencite": {
    "type": "Internal link",
    "table": {"publish": true, "pos": 1, "header": "Reference",
    "namespace": "papers", "label": "Title", "replacement_label": "parencite"},
    "page": {"publish": false, "pos": 0, "placeholder": "REF",
```

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```
    "namespace": "papers", "label": "Title", "replacement_label": "parencite"}
  },
  ...
  "tools": {
    "type": "Raw",
    "table": {"publish": true, "pos": 5, "header": "Tools"},
    "page": {"publish": true, "pos": 7, "placeholder": "TOOLS"}
  },
  ...
  "Fulltext_Link": {
    "type": "External link",
    "table": {"publish": true, "pos": 6, "header": "Link",
    "URL": "URL", "label_type": "fixed", "label": "Full text"},
    "page": {"publish": false, "pos": 0, "placeholder": ""}
  },
```

This is accomplished by three special COLUMN TYPES:

- **Internal link** for constructing a link to DW pages; this requires specifying the namespace under which these pages reside on DW ("namespace"), the name of the column that is used for producing the address of the page ("label") and the name of the column that is used for displaying the link ("replacement_label").
- **External link** for constructing a link to an external page; this requires specifying the name of the column in which the address is contained ("URL"), the type of the text that will be used for displaying the link ("label_type"), i.e. whether the text is always the same ("fixed") or is based on some other column ("field") and then the text that will be displayed ("label"), which is either the fixed text or the name of the column that will be used. In the above example, we are using a "Full text" text for all links to the full text of the paper listed in the table. If we wanted to display the title of the paper instead, we would have to set "label_type" to "field" and "label" to "Title".
- **Raw** for returning the information from AT table without modification; this is required when the operation for processing this information is more involved and will be described in the next section.

Whenever the column type is "Raw", the column name should be an exact match to that column in AT. For internal and external links, the column name can be anything.

3.4 Defining a new class

Having defined the format for your table (and possibly pages), you need to define a new class specific for that table in the `wikicontents.py`.

3.4.1 Class initialization

For simple tables (where the format does not include "Raw" column type, it is sufficient to define the table initialization function (`def __init__()`):

- `self.airtable` creates a connection to the require table in the AT database
- `self.records` fetches all the records
- `self.dw_table_page` defines the location of the table (formatted as a table) on DW
- `self.included_in` defines where the table is actually shown on DW (this is mostly for record-keeping)
- `self.main_column` defines the first column to be displayed - the record is not displayed if information in that column is missing

- `sefl.columndefs` specifies which table format in `tabldef.json` should be applied
- `self.header` constructs the table header
- `self.placeholders` constructs the page placeholders list
- `self.linked_pages` specifies whether the AT table is to be presented also as a set of pages
- `self.dw_page_template` if the former condition is true here we define the template for those pages (more below)
- `self.dw_page_name_column` defines which column is used to create a page name on DW (and its location)
- `self.root_namespace` defines in which namespace the page is included

An example of such a table class for effective_charities_rated is as follows:

```
class EffectiveCharities(Table):

    def __init__(self, wiki, base_name, table_name, user_key):
        super(EffectiveCharities, self).__init__(wiki, base_name, table_name, user_
↪key)
        self.airtable = at.Airtable(base_name, table_name, user_key)
        self.records = self.airtable.get_all()
        self.dw_table_page = 'tables:effective_charities'
        self.included_in = 'iifwiki:earatings'
        self.main_column = 'charity_name'
        self.columndefs = self.tabledefs[table_name]
        self.header = self.construct_header(self.columndefs)
        self.linked_pages = False
```

3.4.2 Construct row function

In more complex cases cases, you need to redefine the basic function for constructing a row of DW table, `def construct_row(self, record)`. This will typically first include a call to the `fetch_row` function that will get a row for a particular record. If some columns have been assigned a "Raw" type, you can then process them as required to compose a final version of the row. For instance, suppose we wanted to concatenate two AT columns into one DW column. Let's say we want to do it for the Giving_companies table and what we want to concatenate is the company name and its sector. The table format will then look like this:

```
"Giving_companies": {
  "Company": {
    "type": "Raw",
    "table": {"publish": true, "pos": 1, "header": "Company"},
    "page": {"publish": true, "pos": 1, "placeholder": "COMPANY"}
  },
  "Sector": {
    "type": "Raw",
    "table": {"publish": true, "pos": 2, "header": "Sector"},
    "page": {"publish": true, "pos": 2, "placeholder": "SECTOR"}
  },
  ...
```

While the class will contain the following function:

```
def automatic_construct_row(self, record):
    row = self.fetch_row(self.columndefs, record)
```

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```
    # find the indices of requred variables in the fetched row
    company_pos = self.columndefs['Company']['table']['pos']-1
    sector_pos = self.columndefs['Sector']['table']['pos']-1
    # find the required variables
    company = row[company_pos]
    sector = row[sector_pos]
    # both are strings so we don't need to transform them, just combine
    company_sector = company + ', ' + sector
    # replace the original variables we don't need any more with empty strings
    row[company_pos] = ''
    row[sector_pos] = ''
    # insert the new variable where desired, let's say in the first position
    row.insert(0, company_sector)
    # format the new row and return
    formatted_row = "| " + " | ".join(row) + " |\n"
    return formatted_row
```

Writing such a function requires some trial and error but once defined will work for all rows.

Another example when a redefinition of `automatic_construct_row` is required is when you want to create some custom popovers or other elements in the table; or when an internal link involves dealing with linked records. That is, the script can automatically take care of simple linked records (just specify the column type as "Link to another record" as explained in the previous section). It can also take care of creating internal links to pages within the same table, e.g. a DW Tools table that contains links to Tools pages (column type will be "Internal link"). However, in order to insert links to papers pages within a Tools table, we would need to create internal links to linked records. This at present requires manual handling - see the call to `get_paper_links` function in ToolsTable.

3.4.3 Set table function

If you want to display the DW table with a particular number of rows displayed by default, you need to insert the following function definition in the new class:

```
def set_table_page(self):
    new_page = self.format_table(page_length=100)
    self.wiki.pages.set(self.dw_table_page, new_page)
```

Here the length is set to 100. If the class does not have such a function, the table will have 10 rows displayed by default.

3.4.4 Creating a page

The procedure for creating a set of pages based on AT table is composed of several steps:

1. Go to DW and define a page template within the namespace that will collect those pages. Call this page `pagetemplate`. See an example of a tool page template here.
2. Define `create_page` function in the table class.

In the first step you can style the template however you like, e.g. adding headings for different sections, changing font etc. The template however is a "template" because it does not contain any actual values from any particular record. It defines where those values will be inserted by means of placeholders. These placeholders will be replaced with actual content from different records, i.e. will be different for every page.

For instance, the tool page template contains a placeholder "TOOLNAME" which for every tool record will contain the tool name. It also has a header "Main findings" which will appear on every tool page. However, under that heading you can see a placeholder "FINDINGS" which will be replaced with content drawn from the "Findings summarized" column in the AT Tools table.

The template should be fetched in the class `__init__` function like this:

```
self.dw_page_template = wiki.pages.get(self.root_namespace + 'pagetemplate')
```

The `create_page` function will then use the template and create a page per table record. At the very minimum this function should be like this:

```
def create_page(self, record):
     # fetch the relevant variables for the page
     variables = self.fetch_row(self.columndefs, record, target_format="page")
     # fetch the placeholders
     keys = self.placeholders
     # construct a list of corresponding pairs (key, variable)
     replacements = tuple(zip(keys, variables))
     # replace placeholders with variables
     page = reduce(lambda a, kv: a.replace(*kv, 1), replacements, self.dw_page_
↪template)
     return page
```

Naturally, if some further processing needs to happen to the variables used to create each page, it has to be encoded in the function - see examples of defined classes.

3.5 Adding a connection

Once a new table class has been implemented, it needs to be added in two places in the `wikimanager.py`:

- the name of the table should be added to the `self.defined_tables` list in manager initialization function
- a connection between the table name and the table class should be added as a following snippet in the `setup_table` function:

  ```
  elif table_name == 'NAME':
       table_base = 'BASE API KEY'
       self.table = wikicontents.SOMETABLE(self.wiki, table_base, table_name, self.
  ↪user_key)
       self.used_table_name = table_name
  ```

where NAME is the name of the table in the AT database, BASE API KEY is the API key for the base in which that table is contained and SOMETABLE is the name of the newly defined class.

3.6 Modifying an existing class

Consider possible changes you might want to implement:

- to change the order of the columns in the table, simply change the numbers assigned to "table"["pos"]
- to change the table header of a specific column, change the text in "table"["header"]
- to publish a previously hidden column, change the value in "table"["publish"] to true
- to define a new column, add the required information to that table in `tabledef.json`

The aim of this package is to provide a two-way connection between Innovations in Fundraising Wiki and an Airtable database. The database stores part of the content that is published on the Wiki: mostly structured content such as evidence for particular innovation tools and bibliographic references. The package provides a way to access this content in the database and post it to the Wiki in various formats, i.e. as tables, pages or forms that can be filled in by users that wish to contribute.

Currently mostly the database-to-wiki connection is implemented. That is, all the changes to the database-driven content need to be done inside the database and then pushed to the wiki. In the future we plan to implement a wiki-to-database connection that would allow content from the wiki to be pushed to the database. For the time being this connection exists only for page template definition, i.e. the template for each of the database-driven pages can be defined on the wiki and this gets fetched and used during page generation.

Furthermore, we started implementing functions for the database-to-database manipulation, in which part of the columns can be updated based on other columns during regular wiki updates.

Note: The package requires Python 3.

CHAPTER

FOUR

FEATURES

- Create new tables and pages on the wiki based on the database content
- Update existing wiki tables and pages based on changes to the database content

CHAPTER FIVE

MODULES

`main` `wikimanager` `wikicontents`

CHAPTER SIX

CONTRIBUTE

- Issue Tracker: https://github.com/kabramova/fundingwiki/issues
- Source Code: https://github.com/kabramova/fundingwiki

CHAPTER SEVEN

SUPPORT

If you are having issues, please let us know in the Issue Tracker.

CHAPTER

EIGHT

LICENSE

The project is licensed under the BSD license.

CHAPTER

NINE

INDICES AND TABLES

- genindex
- modindex
- search