sphinx-notfound-page Documentation

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`sphinx-notfound-page` is a Sphinx extension to create custom 404 pages and help you to generate proper resource links (js, css, images, etc) to render the page properly.

This extension was originally developed to be used on Read the Docs but it can be used in other hosting services as well.

Online documentation:
https://sphinx-notfound-page.readthedocs.io/

Source code repository (and issue tracker):
https://github.com/readthedocs/sphinx-notfound-page/

Badges:

CHAPTER

ONE

WHY DO I NEED THIS EXTENSION?

Sphinx does not create a 404 page by default. Although, you can create it by adding a simple `404.rst` file to your docs but...

If you are reading this documentation, you may already experienced the problem that all your images do no load, all your styles are broken and all the javascript events does not work, when accessing the 404 page of your documentation.

So, if you want to have a nice custom 404 page, you will probably want to use this extension to avoid this headache and let the extension handle these URLs properly for you.

404 page *using* this extension

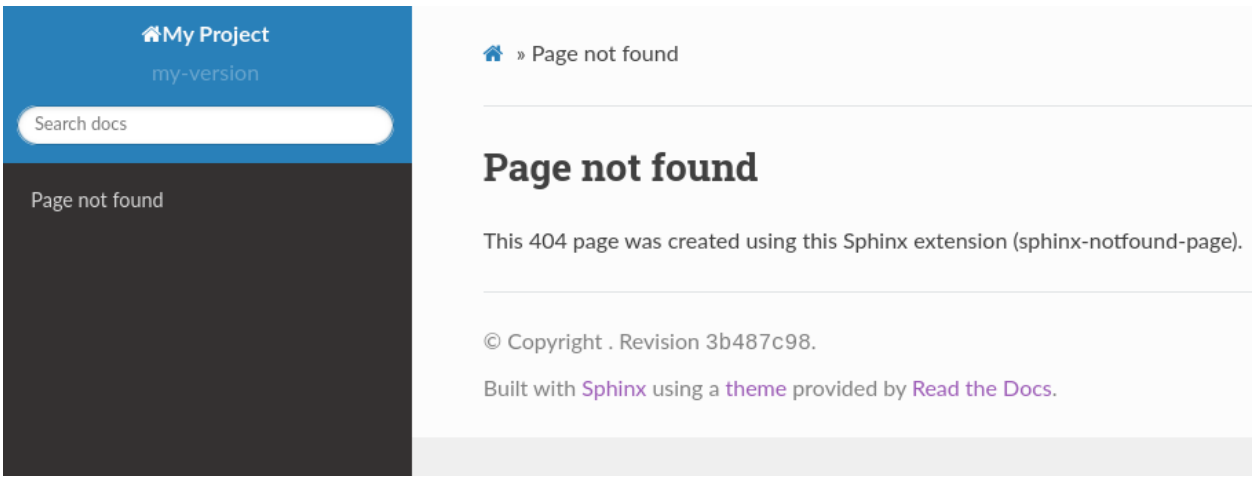


Fig. 1: Example of 404 page *using* `sphinx-notfound-page`.

404 page *without* this extension

1.1 Installation

Install the package

from PyPI

```
$ pip install sphinx-notfound-page
```

from GitHub

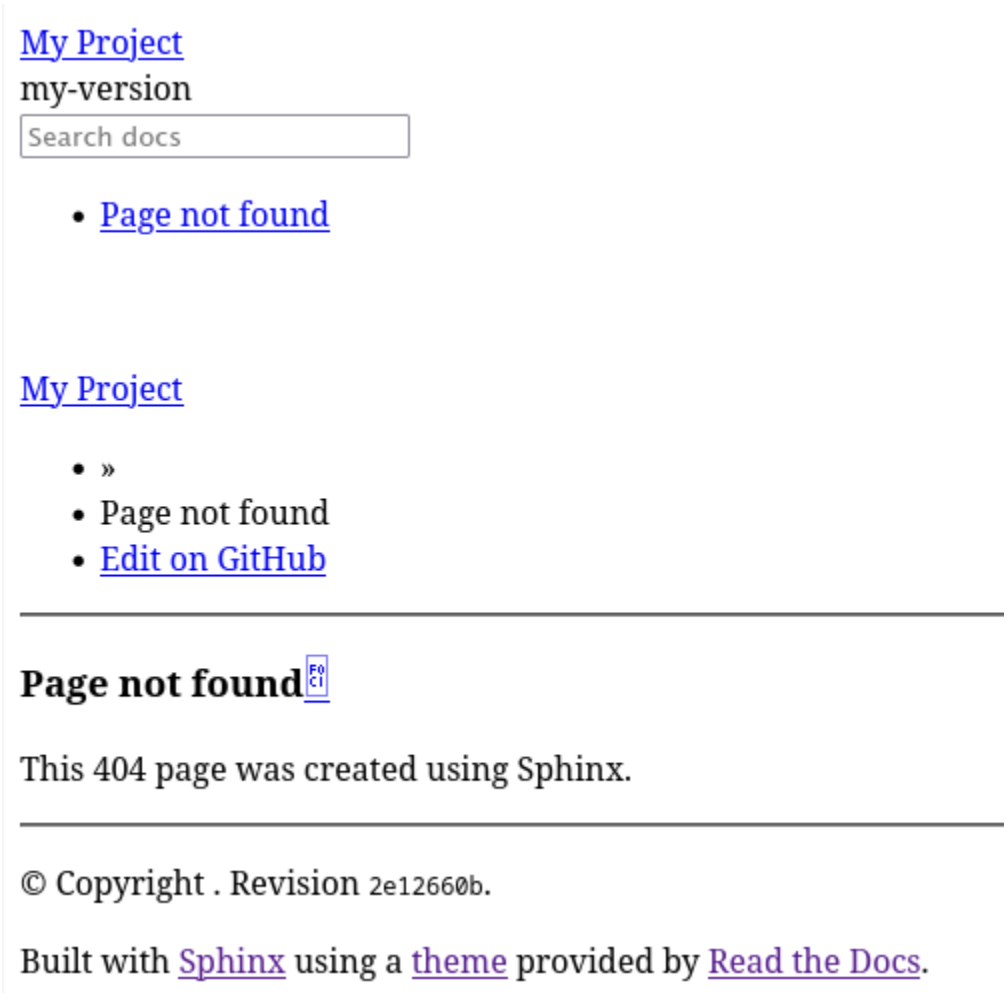


Fig. 2: Example of 404 page *without using* `sphinx-notfound-page`.

```
$ pip install "sphinx-notfound-page @ git+https://github.com/readthedocs/sphinx-notfound-
↪page"
```

Once we have the package installed, we have to configure it on our Sphinx documentation. To do this, add this extension to your Sphinx's extensions in the `conf.py` file.

```
# conf.py
extensions = [
    # ... other extensions here
    'notfound.extension',
]
```

After installing the package and adding the extension in the `conf.py` file, you can build your documentation again and you will see a new file called `404.html` in your documentation's build output.

Warning: If you open the `404.html` file on the browser, you will see that all of the images and css does not display properly. This is because all the URLs are absolute and since the file is being rendered from `file://` in the browser, it does not know where to find those resources.

Do not worry too much about this, this is the expected behavior and those resources will appear once the docs are deployed.

If you can't see the 404.html file using a local simple web server, it is most likely because they often don't support requests for 404 codes. Refer to the *Frequently Asked Questions* for more information.

1.2 Configuration

The default settings generate the most commonly-used URL pattern on Read the Docs: if you have a resource at `_static/js/logic.js` and you generate a 404 page with the default settings, the URL for that resource will be `/en/latest/_static/js/logic.js`.

For other use cases, you can customize these configuration options in your `conf.py` file:

notfound_template

Template used to render the `404.html` generated by this extension.

Default: `'page.html'`

Type: string

notfound_context

Context passed to the template defined by `notfound_template`.

Default:

```
{
    'title': 'Page not found',
    'body': '<h1>Page not found</h1>\n\nThanks for trying.',
}
```

Type: dict

Note: If you prefer, you can create a file called `404.rst` and use reStructuredText to create the context of your `404.html` page. Add the `:orphan:` metadata to the top of `404.rst`, to silence the spurious `document isn't`

`included in any toctree` warning.

notfound_pagename

Page name generated by the extension.

Default: `'404'`

Type: string

notfound_urls_prefix

Prefix added to all the URLs generated in the 404 page.

Default: `'/<language>/<version>/'` where `<language>` is `READTHEDOCS_LANGUAGE` environment variable

and `<version>` is `READTHEDOCS_VERSION` environment variable. In case these variables are not defined, it defaults to `/en/latest/`.

Type: string

> **Warning:** Make sure this config starts and ends with a `/`. Otherwise, you may have unexpected behaviours.

> **Tip:** The prefix can be completely removed by setting it to `None`.

1.3 How It Works

The extension subscribes to some events emitted by the Sphinx application. When these events are triggered, our functions are called and they manipulate the doctree and context passed to the template.

1.3.1 Events subscribed

There are 3 main events that this extension subscribes:

- `doctree-resolved`
- `html-collect-pages`
- `html-page-context`

Each one has an specific goal persuading the same objective: make all resources URLs absolutes.

doctree-resolved

After Sphinx has parsed our source files, this event is triggered. Here, we check if the page being rendered is `notfound_pagename` and in that case, we replace all the URLs for `.. image::`, `.. figure::` and other directives to point the right path.

html-collect-pages

After all HTML pages are collected and this event is emitted, we check for the existence of a `404` page already. If there is one, we do not need to do anything here. If the user has not defined this page, we render the template `notfound_template` with the context `notfound_context`.

html-page-context

Immediately before the template is rendered with the context, this event is emitted. At this point, we override:

- `pathto`[1] function with our custom one that will generate the proper URLs.
- `toctree`[2] key with the same content of the regular toctree but with all the URLs fixed to find the resources from the 404 page.
- `js_tag`[3] and `css_tag`[4] functions with the exact same code but using our own `pathto`.

1.4 Get Involved

We appreciate a lot your interest on getting involved in this small project! Your help will benefit a lot of people around the world.

Please, if you want to collaborate with us, you can check out the list of issues we have on GitHub and comment there if you need further guidance or just send a Pull Request .

1.5 Who Is Using It?

These are some projects using this extension that you can take a look at to understand how they are configured and what's the behavior.

1.5.1 Read the Docs

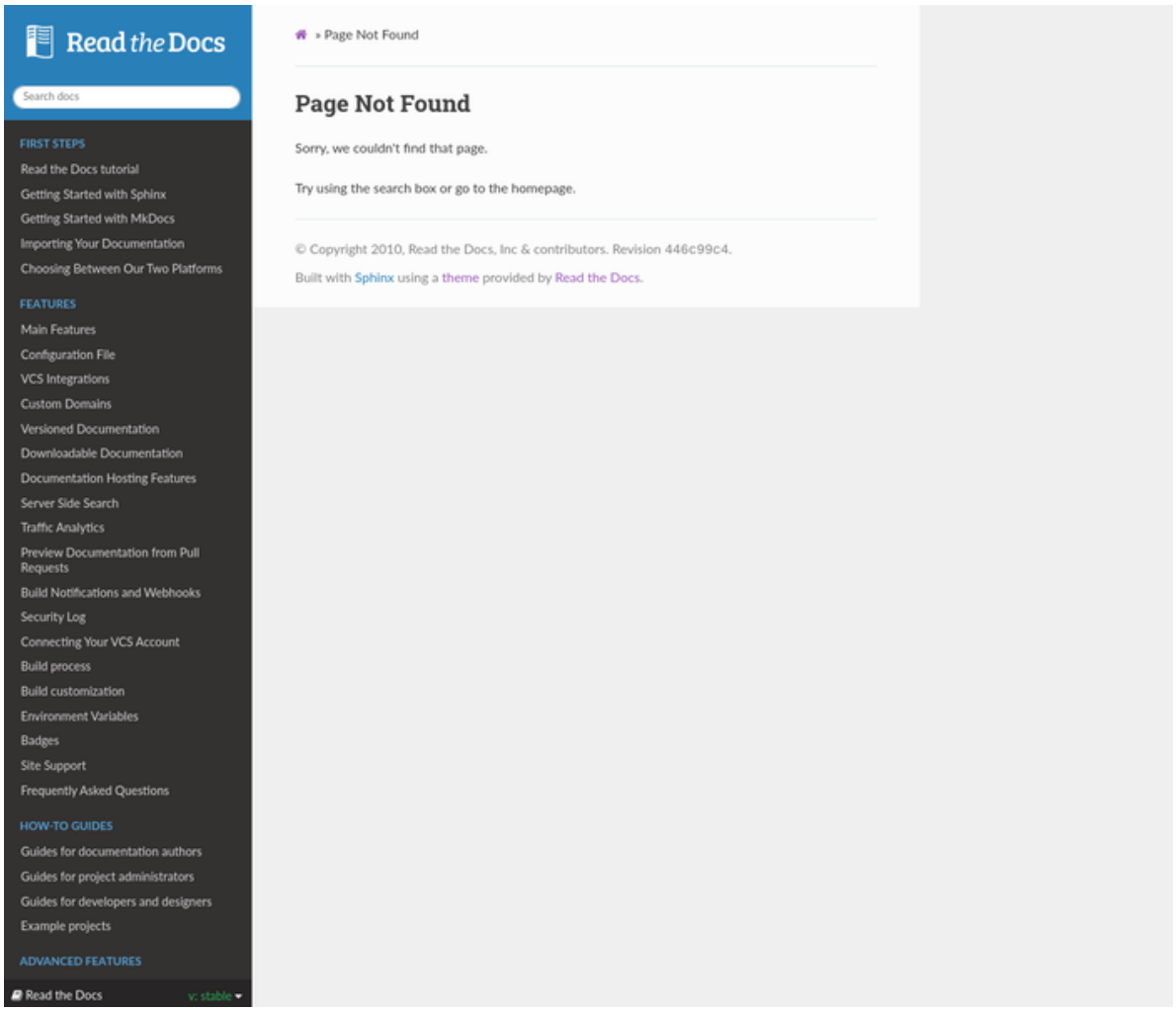
Repository
https://github.com/readthedocs/readthedocs.org

Example 404 Not Found page
https://docs.readthedocs.io/en/stable/not/found.html

Configuration file (`conf.py`)
https://github.com/readthedocs/readthedocs.org/blob/master/docs/conf.py

[1] https://www.sphinx-doc.org/page/development/templating.html#pathto
[2] https://www.sphinx-doc.org/page/development/templating.html#toctree
[3] https://github.com/sphinx-doc/sphinx/blob/v7.2.2/sphinx/builders/html/__init__.py#L1057C1-L1068C1
[4] https://github.com/sphinx-doc/sphinx/blob/v7.2.2/sphinx/builders/html/__init__.py#L1069C1-L1095C1

Screenshot



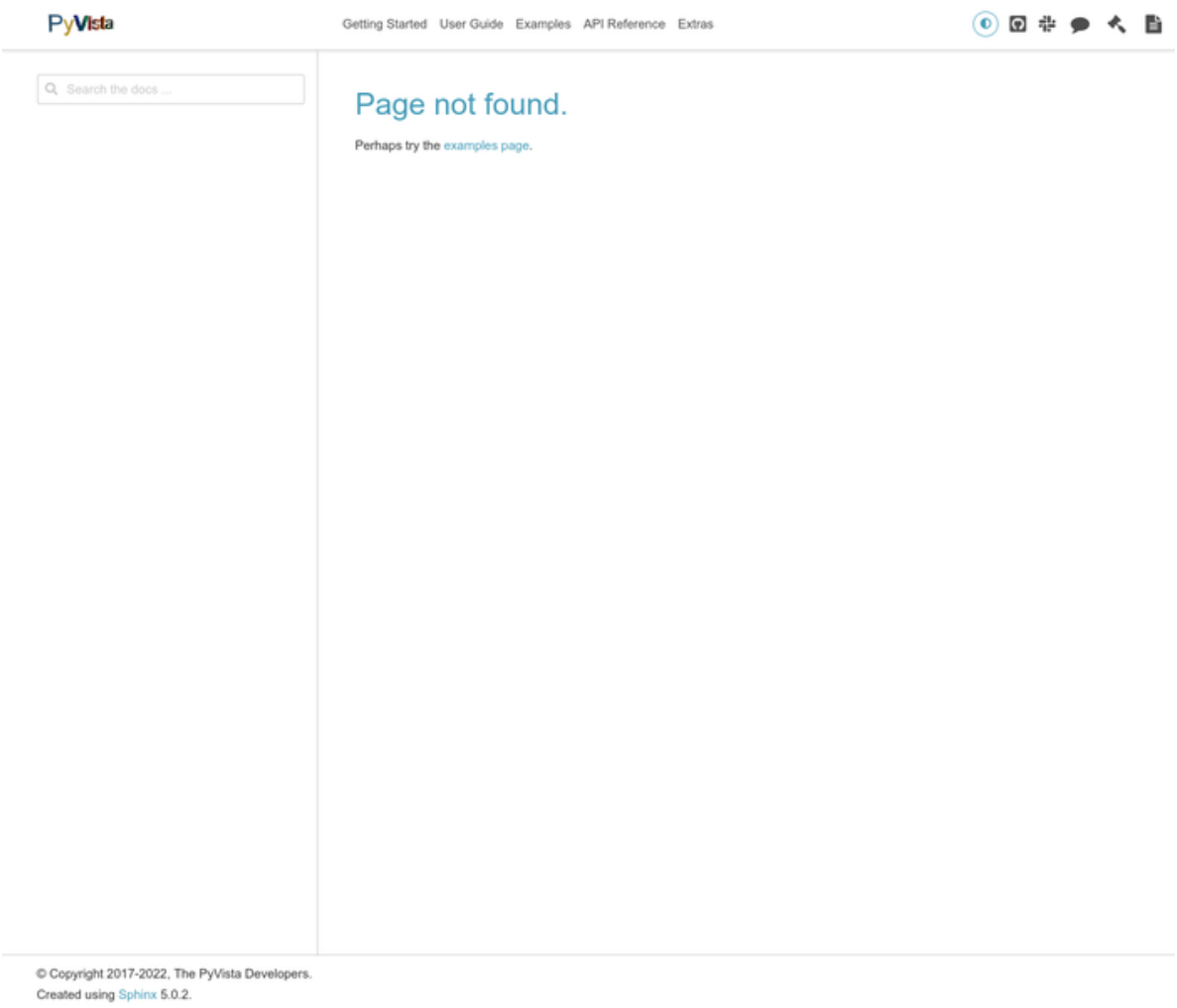
1.5.2 PyVista

Repository
https://github.com/pyvista/pyvista

Example 404 Not Found page
https://docs.pyvista.org/not/found/page.html

Configuration file (`conf.py`)
https://github.com/pyvista/pyvista/blob/master/doc/conf.py

Screenshot



1.5.3 Write the Docs

Repository
https://github.com/writethedocs/www

Example 404 Not Found page
https://www.writethedocs.org/404/

Configuration file (`conf.py`)
https://github.com/writethedocs/www/blob/master/docs/conf.py

Screenshot

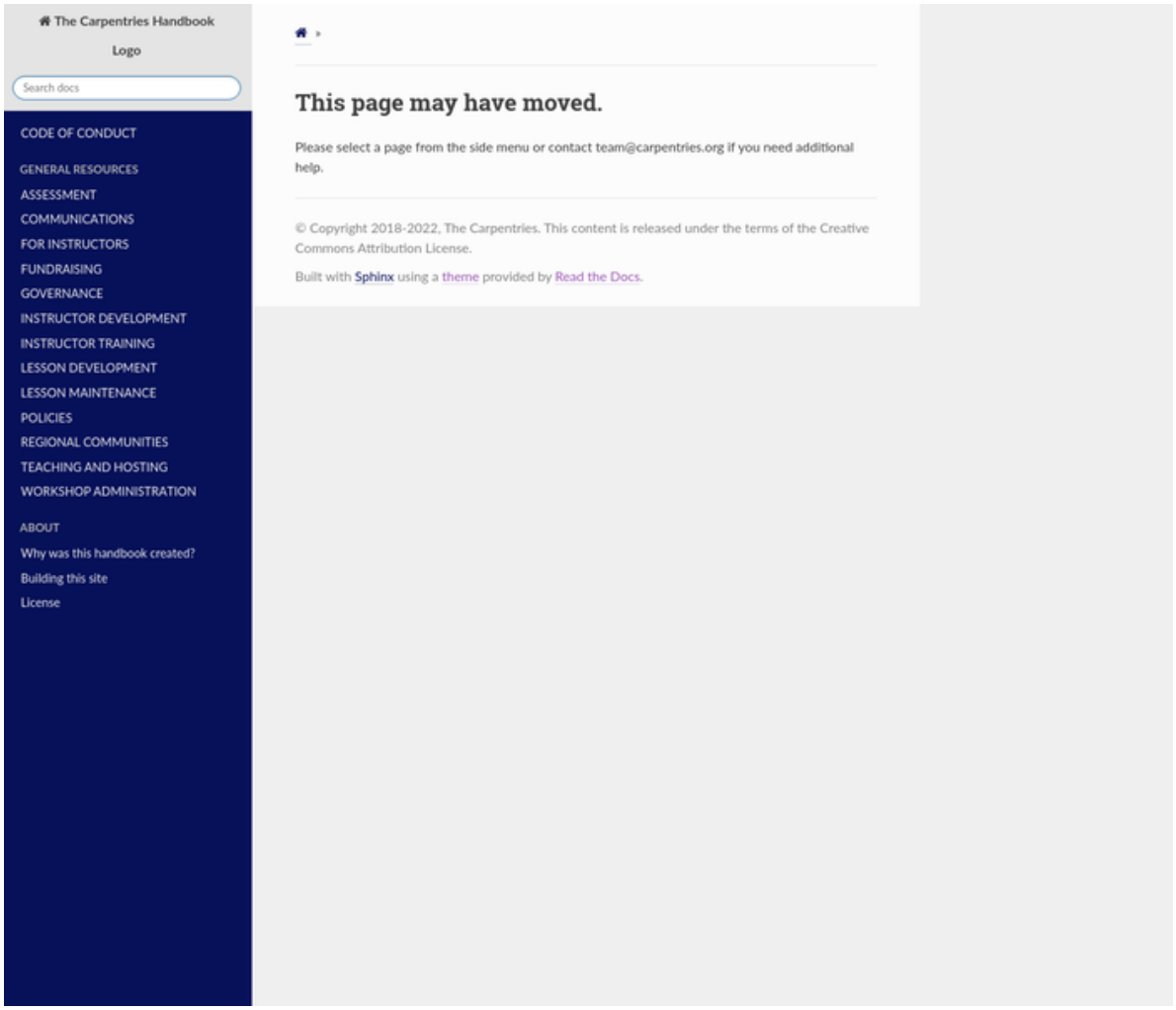
1.5.4 The Carpentries

Repository
https://github.com/carpentries/handbook

Example 404 Not Found page
https://docs.carpentries.org/404/

Configuration file (`conf.py`)
https://github.com/carpentries/handbook/blob/master/conf.py

Screenshot



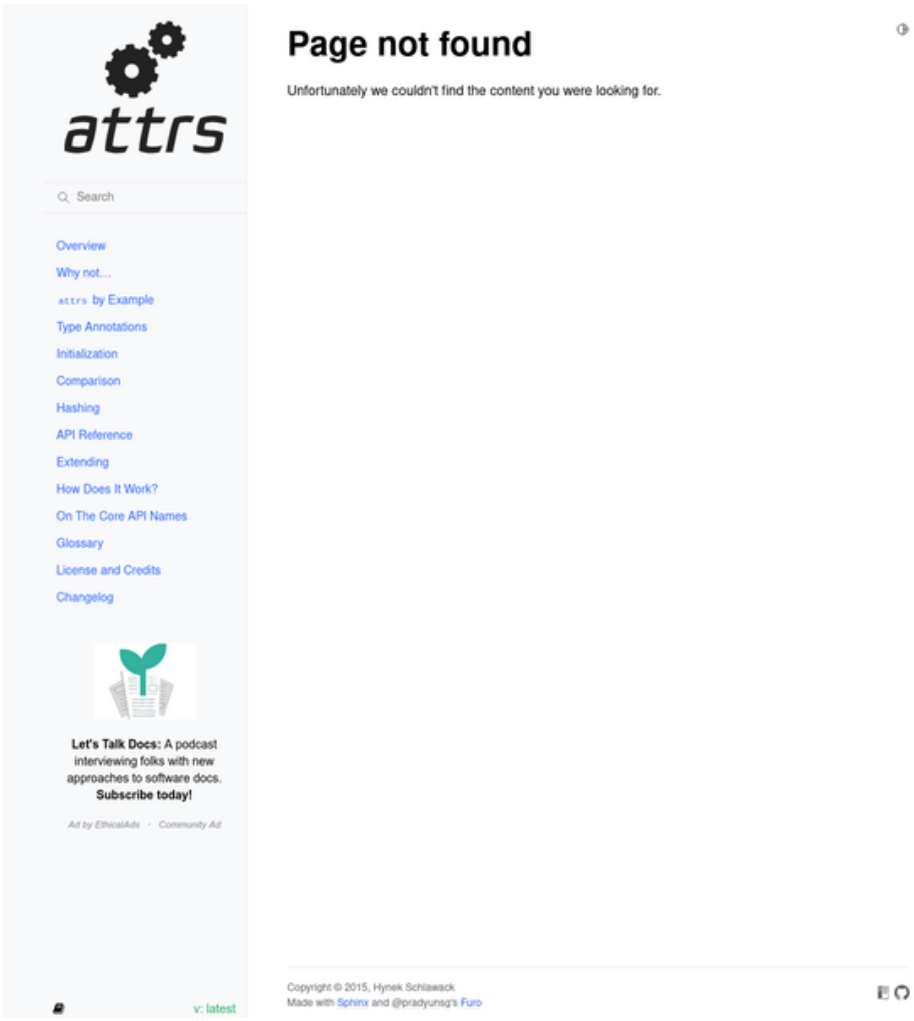
1.5.5 attrs

Repository
https://github.com/python-attrs/attrs

Example 404 Not Found page
https://www.attrs.org/en/latest/404

Configuration file (`conf.py`)
https://github.com/python-attrs/attrs/blob/main/docs/conf.py

Screenshot



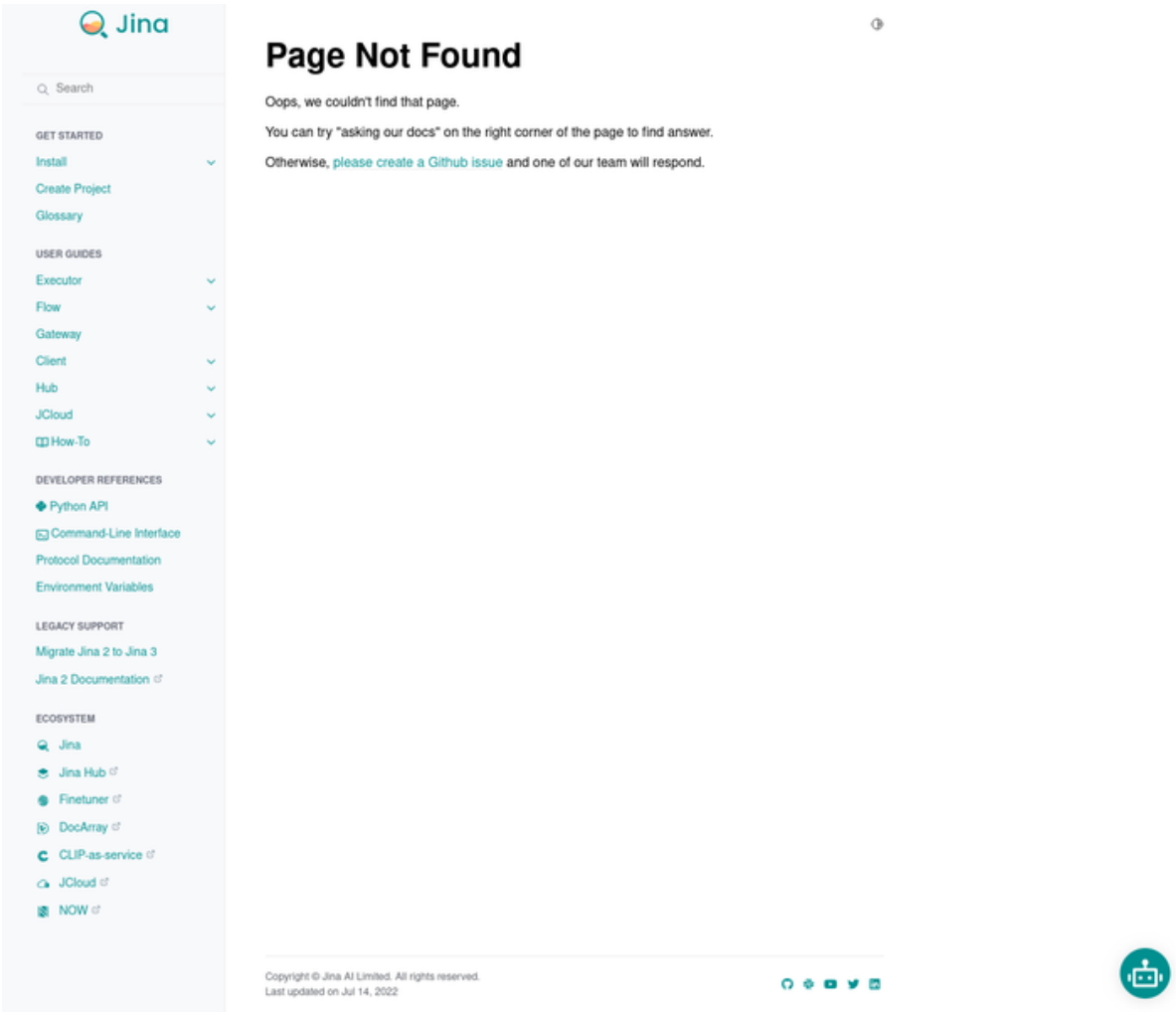
1.5.6 Jina

Repository
https://github.com/jina-ai/docs

Example 404 Not Found page
https://docs.jina.ai/404

Configuration file (`conf.py`)
https://github.com/jina-ai/docs/blob/master/conf.py

Screenshot



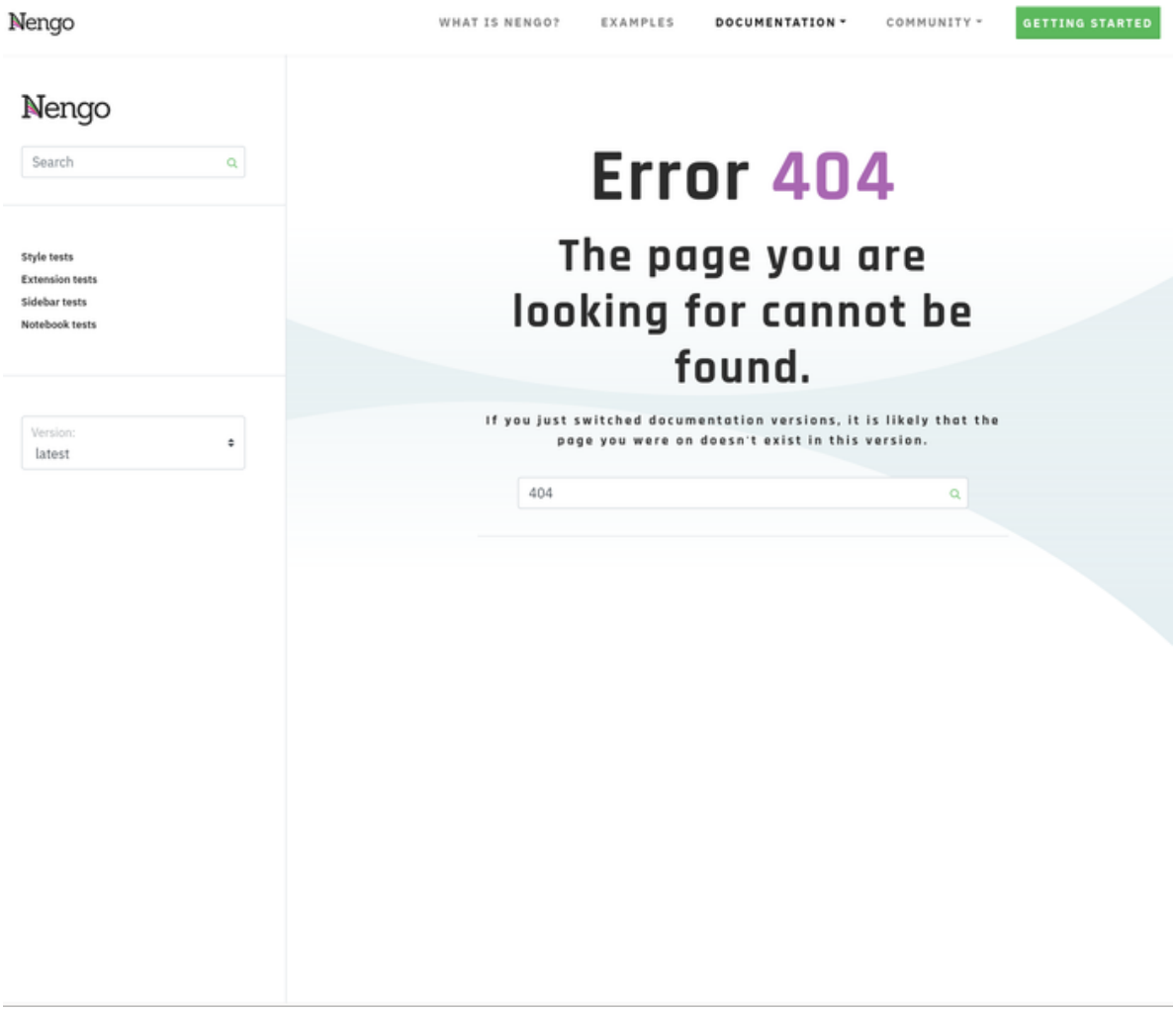
1.5.7 Nengo

Repository
https://github.com/nengo/nengo-sphinx-theme

Example 404 Not Found page
https://www.nengo.ai/nengo-sphinx-theme/v1.2.2/404

Configuration file (`conf.py`)
https://github.com/nengo/nengo-sphinx-theme/blob/master/docs/conf.py

Screenshot



1.6 Frequently Asked Questions

1.6.1 Does this extension work with Read the Docs?

Yes.

Read the Docs should detect the `404.html` page generated by the extension automatically, and serve it when a user hits a not found page.

If you are using a Single Version project, you may want to set *notfound_urls_prefix* to `None`.

1.6.2 Does this extension work with GitHub pages?

Yes.

You may want to set *notfound_urls_prefix* to `None`, and then add `permalink: /404.html` in the YAML front matter.

If you are using the github provided domain, make sure to set the *notfound_urls_prefix* to your repository's name in between two forward slashes. For example if your repository is named `MyRepo`, then `notfound_urls_prefix = "/MyRepo/"`.

1.6.3 Does this extension work with Jupyter Book?

Yes.

You need to enable `sphinx-notfound-page` in your Jupyter Book `_config.yml` as a custom extension. It would look like similar to the following:

```
sphinx:
    extra_extensions:
        - notfound.extension
```

1.6.4 Why is my local web server not showing a 404.html?

Simple web servers, such as `http.server`, don't have a default handler for 404 codes, so it doesn't know to point to the generated `404.html`.

To see an example of adding a custom request handler for 404 codes, see: https://stackoverflow.com/questions/22467908/python-simplehttpserver-404-page

1.6.5 The answer I'm looking for is not here

Please, open an issue in our issue tracker, and let us know what's the problem you are having.

1.7 notfound

1.7.1 Submodules

notfound.extension

Module Contents

Classes

OrphanMetadataCollector	Force the 404 page to be orphan.

Functions

html_collect_pages(app)	Create a 404.html page.
finalize_media(app, pagename, templatename, context, ...)	Point media files at our media server.
doctree_resolved(app, doctree, docname)	Generate and override URLs for .. image:: Sphinx directive.
validate_configs(app, *args, **kwargs)	Validate configs.
setup(app)	

exception notfound.extension.**BaseURIError**(*message: str*, *orig_exc: Exception | None = None*, *modname: str | None = None*)

Bases: sphinx.errors.ExtensionError

Exception for malformed base URI.

notfound.extension.**html_collect_pages**(*app*)

Create a 404.html page.

Uses notfound_template as a template to be rendered with notfound_context for its context. The resulting file generated is notfound_pagename.html.

If the user already defined a page with pagename title notfound_pagename, we don't generate this page.

Parameters

app (*sphinx.application.Sphinx*) – Sphinx Application

notfound.extension.**finalize_media**(*app*, *pagename*, *templatename*, *context*, *doctree*)

Point media files at our media server.

Generate absolute URLs for resources (js, images, css, etc) to point to the right URL. For example, if a URL in the page is _static/js/custom.js it will be replaced by <notfound_urls_prefix>/_static/js/custom.js.

Also, all the links from the sidebar (toctree) are replaced with their absolute version. For example, ../section/pagename.html will be replaced by /section/pagename.html.

It handles a special case for Read the Docs and URLs starting with /_/. These URLs have a special meaning under Read the Docs and don't have to be changed. (e.g. /_/static/javascript/readthedocs-doc-embed.js)

Parameters

- **app** (*sphinx.application.Sphinx*) – Sphinx Application
- **pagename** (*str*) – name of the page being rendered
- **templatename** (*str*) – template used to render the page
- **context** (*dict*) – context used to render the page
- **doctree** (*docutils.nodes.document*) – doctree of the page being rendered

notfound.extension.**doctree_resolved**(*app*, *doctree*, *docname*)

Generate and override URLs for .. image:: Sphinx directive.

When .. image:: is used in the 404.rst file, this function will override the URLs to point to the right place.

Parameters

- **app** (*sphinx.application.Sphinx*) – Sphinx Application
- **doctree** (*docutils.nodes.document*) – doctree representing the document
- **docname** (*str*) – name of the document

class notfound.extension.**OrphanMetadataCollector**

Bases: sphinx.environment.collectors.EnvironmentCollector

Force the 404 page to be orphan.

This way we remove the WARNING that Sphinx raises saying the page is not included in any toctree.

This collector has the same effect than `:orphan:` at the top of the page.

clear_doc(*app*, *env*, *docname*)

Remove specified data of a document.

This method is called on the removal of the document.

process_doc(*app*, *doctree*)

Process a document and gather specific data from it.

This method is called after the document is read.

merge_other(*app*, *env*, *docnames*, *other*)

Merge in specified data regarding docnames from a different *BuildEnvironment* object which coming from a subprocess in parallel builds.

notfound.extension.**validate_configs**(*app*, **args*, ***kwargs*)

Validate configs.

Shows a warning if one of the configs is not valid.

notfound.extension.**setup**(*app*)

notfound.utils

Module Contents

Functions

replace_uris(app, doctree, nodetype, nodeattr)	Replace `nodetype` URIs from `doctree` to the proper one.

notfound.utils.**replace_uris**(*app*, *doctree*, *nodetype*, *nodeattr*)

Replace `nodetype` URIs from `doctree` to the proper one.

If `nodetype` is an image (`docutils.nodes.image`), the URL is prefixed with `Builder.imagedir` and the original image path is added to `Builder.images` so it's copied using Sphinx's internals before finalizing the building.

Parameters

- **app** (*sphinx.application.Sphinx*) – Sphinx Application
- **doctree** (*docutils.nodes.document*) – doctree representing the document
- **nodetype** (*docutils.nodes.Node*) – type of node to replace URIs

- **nodeattr** (*str*) – node attribute to be replaced

1.7.2 Package Contents

notfound.**__version__** = '1.0.0'

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