

# FolderShare: Building a data sharing cloud on Drupal 8 for researchers

Amit Chourasia, David Nadeau & Michael Norman  
San Diego Supercomputer Center, UC San Diego

Project code: [dibbs.seedme.org/downloads](http://dibbs.seedme.org/downloads)

or

[drupal.org/projects/foldershare](http://drupal.org/projects/foldershare)

[drupal.org/projects/smalldata](http://drupal.org/projects/smalldata)

Trial website: [sandbox.seedme.org](http://sandbox.seedme.org)

Project website: [dibbs.seedme.org](http://dibbs.seedme.org)

# Presentation Overview

1. Background & motivation
2. Architecture
3. SeedMe2 platform

## **FolderShare: Virtual file system for Drupal**

- » Entity data model & access control
- » File management & security
- » Views integration
- » UI & Command plugins
- » File formatters
- » Web services

## **Small data module and API**

- Visualization

4. Target users/Use cases
5. Screenshots
6. Demo

# SeedMe Projects

## SeedMe 1

a.k.a. Stream encode explore and disseminate My experiments

- **Video encoding from visualization images was the main focus**
- Based on Drupal 7
- In production as Platform as a Service (PaaS)

## SeedMe 2 : Data sharing building blocks

Evolution of the original SeedMe project (Complete rewrite)

- **Data organization, sharing and data management is the main focus**
- Incorporates user feedback from original SeedMe project
- Based on Drupal 8
- Built for distribution (open source) and extension

# SeedMe 2's focus

- **Enable rapid access to data to consumable data over the web**
  - Must be handled by stock web browser (Upload < 2GB per file)
  - Must be displayable on many devices (Phone to PC)
- **Rich presentation**
  - Support customization/extension
- **Discoverability**
  - Index and search files, descriptions, etc..
- **Three way interaction**
  - Web browser
  - Command line
  - API

## Data management stumbling blocks

Transfer

Storage

Access  
control

Collaboration

Automation

But what about Presentation and Discovery?

## Data management stumbling blocks

Transfer

Storage

Access  
control

Collaboration

Automation

## Three D's : Data, Description, Discussion

### Issues due to content dispersion

Data in the Cloud

Description in  
someone's mind

Discussion on emails

# Related solutions

## Filesystem based solutions

### Tools

SCP  
FTP

### Middleware

Globus  
IRods  
NEWT

### Software repositories

GitHub  
SVN  
CVS

### File hosting

Cloud drives  
(Dropbox, etc)  
WebDAV

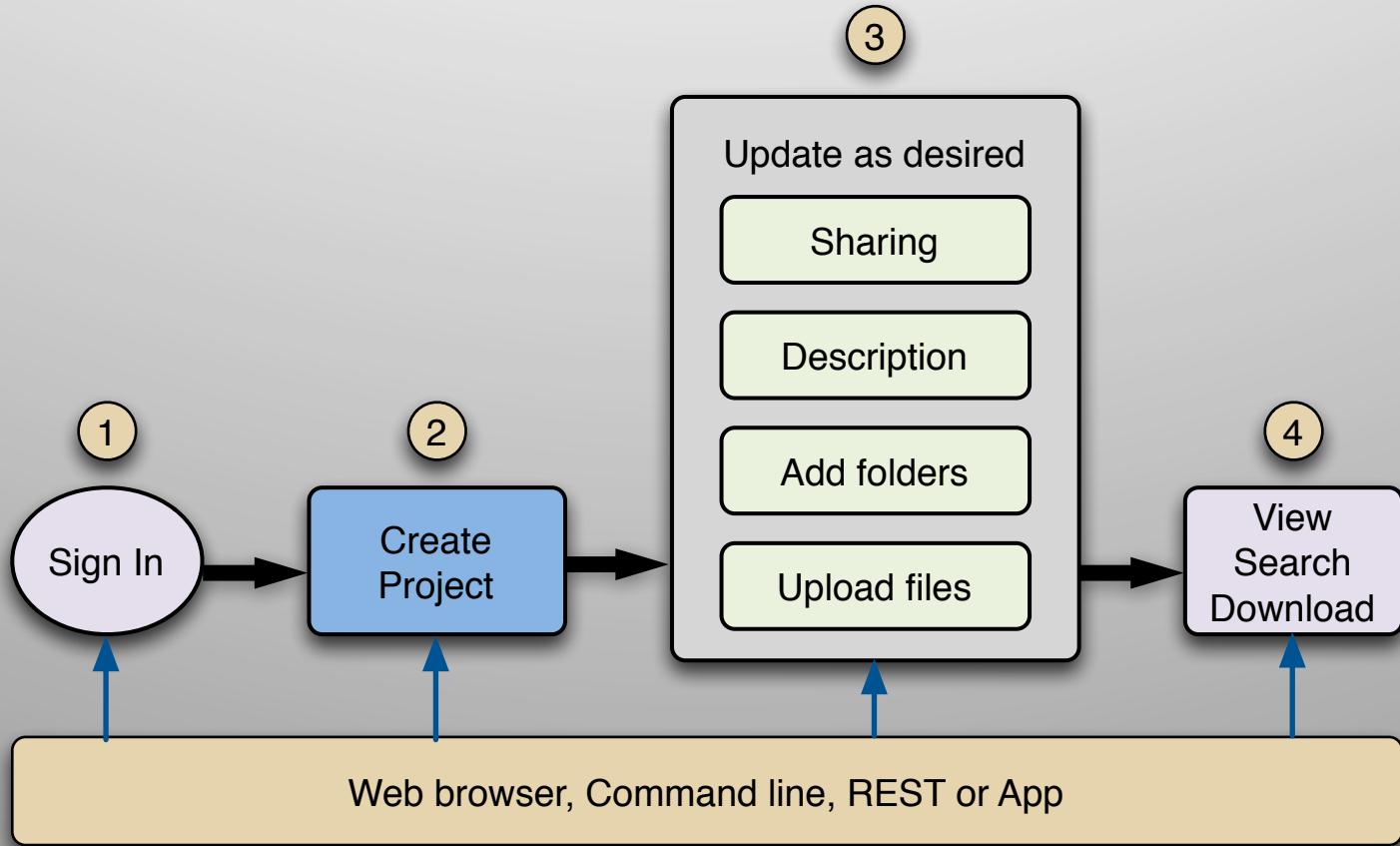
## Content management system based solutions

HubZero  
FigShare

## Limitations of existing solutions

- Lack extensibility
- Lack support for rich content (description, discussion, etc...)
- Lack independent developer support
- Lack 3 way interaction via web browser & command line & API
- Resource restricted

# Workflow



# Architecture

Small data  
(PHP library)

Drupal 8  
Contributed  
Modules  
e.g.  
Federated  
Authentication  
via OIDC  
module

## Drupal 8

### Modules

- Virtual file system
  - Access control
  - Hierarchical storage
  - Command plugins
  - UI and display
  - Search / index
  - Web services
- File formatters
  - Quick Visualization

Database  
(MySQL)

Webserver  
(Apache + PHP)

## Users

Web browser

Command line

REST clients

# Drupal (Content Management System)

- Modular and extensible architecture  
(1,000+ community contributed modules for version 8)
- Widely used in industry, academia and government  
(third most popular CMS on web)
- Large developer & support community  
(4,000 contributors for Drupal 8 core + thousands more)
- Security advisory and updates for core and stable contributed modules every month
- Versatile deployment options  
(personal hosting, institutional hosting, cloud hosting)

# FolderShare module



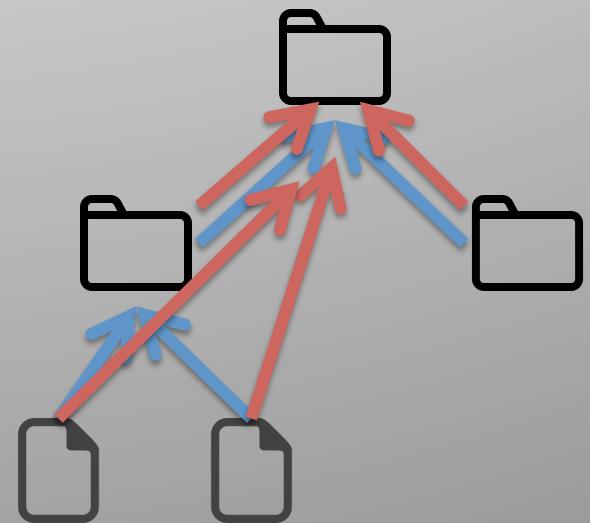
- Virtual file system (fieldable):
  - Entity type & API
  - Access controls
  - Usage tracking
  - Views, displays, breadcrumbs, forms
  - Plugins for field formatters, search, views, actions, and queue workers
- Configurable by sites
  - e.g. Keywords, comments, flags, DOIs
- Extensible by developers

# Files & folders

- Children point to parents
  - Parent IDs enable fast queries for all children of a folder
  - Root IDs enable fast queries for access controls and breadcrumbs

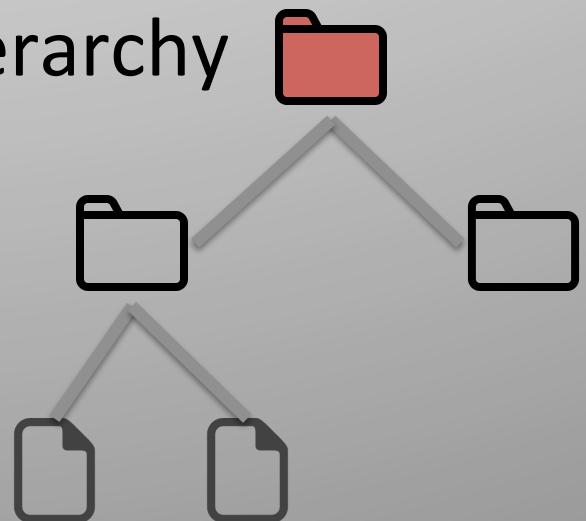
↗ parentid points to immediate parent

↗ rootid points to top folder



# Access controls

- Drupal account-based
- Permissions + access control list on top folders
  - List of users that can view and author
- Top folder controls entire hierarchy
  - Simpler than desktop OSes
  - Similar to file sharing services
  - Fast to check access



# File storage

- Folders only exist in database
- Files described in database & stored on disk
- Disk directory != folder hierarchy
  - Better for security and load balancing
  - Files have generated names
    - Avoids name collisions
    - Avoids character set and name length limits

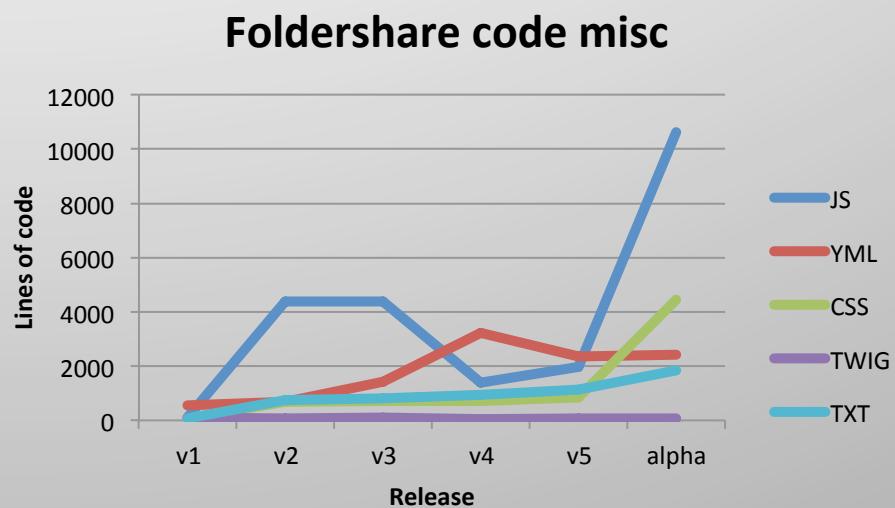
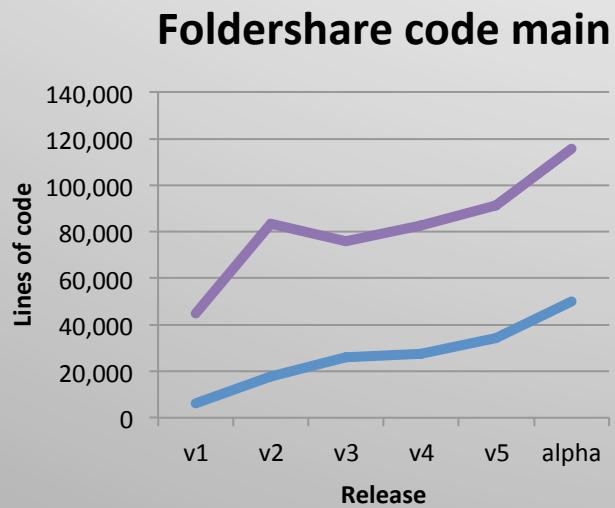
# Views

- List personal, public, and shared files & folders
  - Pages & embedded views in folder pages
- Integrated desktop-like UI
  - Select files and folders
  - Then choose menu command
- Three UI variants:
  - No scripting
  - Scripting but no AJAX
  - Scripting with AJAX

# Plugins

- Field formatters
  - Folder names, entity references, MIME-type icons
- Search
  - Index and present results
- Queue worker
  - Update folder hierarchy sizes in background
- Actions & custom commands
  - Menu UI items to add, delete, etc

# Code trivia



**Total lines of php code**

Node : 25,639 (Drupal core 8.5.0)

Foldershare: 50,156 (Alpha version)

# Foldershare API Documentation

Home » API reference » foldershare-8.x-1.x

Classes, traits, and interfaces ◉

The screenshot displays the Foldershare API Documentation interface, featuring several interconnected pages:

- Class Page:** Shows the `FolderShare` class with its description: "Manages a hierarchy of folders, subfolders, and files." It also lists common fields for every folder or file item.
- Function Page:** Shows the `hook_foldershare_access` function with its description: "Controls access to a file or folder." It details the access control mechanism and steps.
- Method Page:** Shows the `comment_foldershare_update_index` method.
- Search Bar:** A search bar at the top right allows users to search for functions, files, or topics.
- API Navigation:** A sidebar on the left provides navigation links for various API components like AdminSettings, AdminUsagePage, ArchivItem, ChangeOwnerItem, Constants, CopyItem, DeleteItem, DownloadItem, DuplicateItem, and EditCommand.

## Functions ◉

foldershare-8.x-1.x	Name contains	Description
	Contains filters are case sensitive	
	Name	
	comment_foldershare_update_index	
	foldershare_entity_extra_field_info	
	foldershare_file_download	
	foldershare_foldershare_view	
	foldershare_get_user_usage_schema	
	foldershare_help	
	foldershare_preuninstall	
	foldershare_schema	
	foldershare_theme	
	foldershare_token_info	
	foldershare_tokens	
	foldershare_uninstall	
	foldershare_user_cancel	
	foldershare_user_predelete	
	foldershare_views_data_alter	

## function hook\_foldershare\_access ◉

`foldershare-8.x-1.x foldershare.api.php hook_foldershare_access( FolderShareInterface $entity, string $op, AccountInterface $account )`

Controls access to a file or folder.

FolderShare's access control mechanism has these steps:

- Check if the user is an admin
- Access grants for viewing.
- Access grants for authoring.
- Access grants for users known, but currently without viewing or autho

When 'kind' is 'file', the entity has an additional field containing the entity ID.

When 'kind' is 'image', the entity has an additional field containing the ent

Steps are executed in order and the remaining steps are skipped if there is a definitive answer for a step. For instance, if the user is an administrator, they are granted access and the remaining steps are not executed. If the user does not have permission or the entity does not grant them access, then they are denied access and the remaining steps are not executed. This means this hook is only executed if the user is not an admin and does have permission and access granted. This hook, then, can only make a final allow/deny choice.

### Parameters

`\Drupal\foldershare\FolderShareInterface $entity`: The entity the user wishes to access. If the entity is NULL, the user is requesting access to the root folder list.

`string $op`: The operation to be performed. Access operators are one of:

- 'create'.
- 'createroot'.
- 'delete'.
- 'share'.
- 'update'.
- 'view'.

`\Drupal\Core\Session\AccountInterface $account`: The user's account.

### Return value

`\Drupal\Core\Access\AccessResultInterface` Returns the access result to allow or forbid access, or have a neutral opinion.

### See also

`\Drupal\Core\Entity\EntityAccessControlHandler`

# SmallData API & Module



SmallData

- Structured data parsers & writers
  - Tables, trees, and graphs
  - JSON, CSV, TSV, TXT, etc.
- Field formatters
  - Light-weight visualization
  - Line plots, bar charts, pie charts, etc.

## **FolderShare configuration**

**Admin menu**

Structure > FolderShare

# **FOR ADMINISTRATORS**

# FolderShare configuration

## Fields

### Manage fields, forms & display

Configuration located in admin menu  
Structure > FolderShare

## FolderShare

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

FolderShare manages a virtual file system with files, folders, and subfolders. Module settings control how content is stored, presented, searched, and secured. See also [Module help](#) and the module's [Usage report](#).

Fields

Files

Interface

Lists

Search

Security

Web services

#### Manage fields for files and folders.

Files and folders contain fields for names, dates, sizes, descriptions, and more. You may add your own fields and adjust how fields are displayed when viewed and edited.

#### Fields, forms, and displays

Built-in fields for files and folders include a name, description, size, and creation and modification dates. Fields may be adjusted with the optional [Field UI module](#) to add new fields and manage how fields are viewed and edited.

##### [Manage fields](#)

Create, delete, and modify additional fields for files and folders.

##### [Manage form display](#)

Manage forms to edit fields for files and folders.

[Restore original settings](#)

##### [Manage display](#)

Manage how fields are presented on file and folder pages.

[Restore original settings](#)

#### See also

##### [Content Language \(Not enabled\)](#)

Enable users to select a default language for appropriate text fields. ([Core module](#))

##### [Comment types](#)

Configure how comments are created and shown on files and folders. See the [Comments](#) documentation. ([Core module](#))

##### [Dates and times](#)

Configure date and time formats available when creation and modification dates are displayed. See the [Date-Time](#) documentation. ([Core module](#))

##### [Languages \(Not enabled\)](#)

Enable users to provide authored translations of appropriate text fields. ([Core module](#))

##### [Regional](#)

Configure regional formats for the display of dates and times, and select how times are mapped to the current or user time zone. ([Core module](#))

##### [Text Editors](#)

Configure WYSIWYG text editors available on entity edit forms to assist in editing formatted text. See the [Text editor](#) documentation. ([Core module](#))

##### [Text Formats](#)

Configure text formats available on entity edit forms to filter and process formatted text. See the [Filter](#) documentation. ([Core module](#))

##### [Tokens](#)

Manage tokens created by this module and others. ([Third-party module](#))

[Save configuration](#)

# FolderShare configuration

## Files

### Storage location & upload restrictions

#### FolderShare

The file extensions list has been restored to its original values.

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

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Fields

Files

Interface

Lists

Search

Security

Web service

#### Select how files are uploaded and stored.

Files are stored on the site's server and tracked in the site's database. Administrators may restrict uploaded files based upon their size and name extension, and limit the number of files uploaded at once.

##### File system

Select whether the module should use the site's *Public* or *Private* file system to store files. A *Private* file system provides better security.

This setting is disabled because there are already files under management by this module. To change this setting, you must [Delete all](#) files first.

File system: \*

*Default: Public*

##### Storage location

Select the server subfolder in the *Public* or *Private* file system into which the module will save files. This is typically named after the module. The subfolder will be created automatically if necessary.

This setting is disabled because there are already files under management by this module. To change this setting, you must [Delete all](#) files first.

Location: \*

*Default: foldershare*

##### File name extensions

Select whether uploaded files should be restricted to a specific set of allowed file name extensions.

Enable restrictions

##### Allowed file name extensions:

```
1st 3ds a aac accda accdb accde acccdt ade adn adp aiff asc ascii asp aspx au avi bash bat blend bmp  
bz2 c c++ cab cdb cgi cgm cmake config cp cpio cpp cs css csv csx cxx dae daq dat data dmrg doc doob  
doom docx dot dotm dobx dtd dxfs fff fits fits flac gif gz h h5 hdf hdf5 hpp htm html ico inc include info ini  
install iso j2k jar java jpeg jpg jpm jpx json jsp laccdbs ldb less ltx m m3u m4a m4p m4v maf make man  
man maq mar mat mat md mda mde mdf mdn mdt mdw mj2 mkv mlv mn module mogg mov mp3 mp4  
mpeg mpg mpv nc oga ogg p pbm pdf perl pgm phar php pl pm png ppm pot potx ppm ppm pps ppsx  
ppt pptm pptx prl proj ps py pyc python qt r rar ras rdf readme rss rtf sass scss sh shar sit sitx sldm sldx stl
```

Separate extensions with spaces and do not include dots. Changing this list does not affect files that are already on the site.

##### Maximum file upload size

Set the maximum size allowed for each uploaded file. This size is also limited by PHP settings in your server's "php.ini" file and your site's top-level ".htaccess" file. These are currently limiting file sizes to 524288000 bytes.

Size: \*

*Default: 524288000 bytes*

##### Maximum number of files per upload

Set the maximum number of files that may be uploaded in a single pload. This number is also limited by PHP settings in your server's "php.ini" file and your site's top-level ".htaccess" file. These are currently limiting file uploads to 20 files.

# FolderShare configuration

## Interface

### Command plugins

#### FolderShare

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

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Fields

Files

Interface

Lists

Search

Security

Web services

#### Manage the user interface.

File and folder lists include a menu and toolbar for commands to create, upload, edit, and delete items. You may configure select the commands to include.

#### Menus

Commands are plugins provided by this module and others. By default, all available commands are included on menus. You may restrict menus to a specific set of commands.

Enable command menu restrictions

Select the commands to allow:

**Upload Files**

Upload files into a folder. (*foldershare module*)

**Move**

Move files and folders to another folder. (*foldershare module*)

**Duplicate**

Duplicate files and folders, and all of their contents. (*foldershare module*)

**Uncompress**

Uncompress an archive file and add its contents to this folder. (*foldershare module*)

**Change Owner**

Change the owner of files and folders, including the content of subfolders. (*foldershare module*)

**Rename**

Rename an item. (*foldershare module*)

**Delete**

Delete files and folders, and all of their content. (*foldershare module*)

**Download**

Download files and folders, and all of their content. (*foldershare module*)

**Copy**

Copy files and folders to another folder. (*foldershare module*)

**New Folder**

Create a new empty folder with a default name. (*foldershare module*)

**Share Folder Tree**

Share a folder tree and all of its contents with other users. (*foldershare module*)

**Compress**

Compress files and folders, and all of their contents. (*foldershare module*)

**Edit**

Edit the fields of a file or folder. (*foldershare module*)

[Save configuration](#)

# FolderShare configuration

## Lists

### Manage listing of file and folders

#### FolderShare

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

FolderShare manages a virtual file system with files, folders, and subfolders. Module settings control how content is stored, presented, searched, and secured. See also [Module help](#) and the module's [Usage report](#).

[Fields](#)

[Files](#)

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[Search](#)

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[Web services](#)

#### Manage lists of files and folders.

You may configure file and folder lists to adjust which fields are displayed and how their values are presented.

#### Views

The layout and presentation of lists may be controlled using the optional [Views UI module](#).

#### [FolderShare Lists](#)

List files, folders, and subfolders.

[Restore original settings](#)

#### See also

##### [Dates and times](#)

Configure date and time formats available when creation and modification dates are displayed. See the [Date-Time](#) documentation. (*Core module*)

##### [Regional](#)

Configure regional formats for the display of dates and times, and select how times are mapped to the current or user time zone. (*Core module*)

[Save configuration](#)

# FolderShare configuration

## Search (optional)

### FolderShare

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

FolderShare manages a virtual file system with files, folders, and subfolders. Module settings control how content is stored, presented, searched, and secured. See also [Module help](#) and the module's [Usage report](#).

[Fields](#)

[Files](#)

[Interface](#)

[Lists](#)

[Search](#)

[Security](#)

[Web services](#)

#### Manage search indexing and results.

File and folder names, descriptions, and file content is indexed and shown in search results. You may configure when indexing is done, what is included, and how search results are presented.

#### Core search

The optional [Search module](#) provides basic support for searching content. FolderShare provides an optional search plugin to index and present search results for files and folders.

#### Search pages

Configure how search creates indexes of site content and presents search results.

[Restore original settings](#)

#### See also

##### Cron

Configure and run automatic administrative tasks, such as when search indexing is done. See the [System](#) and [Automated Cron](#) documentation. (Core module)

[Save configuration](#)

# FolderShare configuration

## Security

### Manage sharing capabilities

#### FolderShare

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

FolderShare manages a virtual file system with files, folders, and subfolders. Module settings control how content is stored, presented, searched, and secured. See also [Module help](#) and the module's [Usage report](#).

[Fields](#)

[Files](#)

[Interface](#)

[Lists](#)

[Search](#)

[Security](#)

[Web services](#)

#### Manage how content is secured and shared.

Files and folders may be shared among users and with the public. Content may be accessed using a web browser and using optional services that work with software that runs on personal computers and mobile devices.

#### Sharing

Select whether to enable sharing, and whether users may publish their content for public access by anonymous site visitors. When sharing is disabled, users may only view and edit their own files and folders.

Enable shared access

Enable shared access with anonymous users

#### See also

##### [User permissions](#)

Grant view, author, share, and administer permissions to user roles. See the [User](#) documentation. (Core module)

[Save configuration](#)

[Settings](#) [Manage fields](#) [Manage form display](#) [Manage display](#)

FolderShare manages a virtual file system with files, folders, and subfolders. Module settings control how content is stored, presented, searched, and secured. See also [Module help](#) and the module's [Usage report](#).

[Fields](#)[Files](#)[Interface](#)[Lists](#)[Search](#)[Security](#)[Web services](#)

### Manage REST web services.

Files and folders are always accessible via a web browser, but additional web services may be enabled to allow client applications to access content without a browser. You may configure these services to enable or disable specific types of access.

#### REST web services

The [REST module](#) manages REST (Representational State Transfer) web services, such as those provided by FolderShare. While you can edit YML files to customize a configuration, the optional [REST UI module](#) provides a better user interface. Using the [REST UI module](#) you may enable and disable specific services and adjust their features.

##### [REST module](#)

Provide REST web services for entities and other features at the site.

[Restore original settings](#)

#### See also

##### [REST administration permissions](#)

Grant administrative permissions for REST services. See the [REST](#) documentation. (*Core module*)

##### [REST UI](#)

Manage the REST configuration for the site. (*Third-party module*)

[Save configuration](#)

# FolderShare REST settings

Requires REST UI contributed module

Manage REST operations

## Settings for resource *FolderShare files and folders*

Here you can restrict which HTTP methods should this resource support. And within each method, the available serialization formats and authentication providers.

Granularity Resource 

### Methods

- GET
- POST
- DELETE
- PATCH

### Accepted request formats

- json
- xml

### Authentication providers

- basic\_auth
- cookie

Save configuration

# FolderShare Usage

Admin menu

Reports > FolderShare usage

## FolderShare usage

### Current usage by user

<a href="#">Users</a> ▾	<a href="#">Top-level folders</a>	<a href="#">Folders</a>	<a href="#">Files</a>	<a href="#">Bytes</a>
<a href="#">Anonymous</a>	0	0	0	0 bytes
<a href="#">Dr. Aarush Ahuja</a>	1	2	16	0 bytes
<a href="#">Dr. Buena Bonita</a>	0	1	5	1.27 KB
<a href="#">Dr. Chandler Charles</a>	1	2	20	1.54 KB
<a href="#">Site Administrator</a>	0	0	0	120.68 MB
<a href="#">demo (Data manager)</a>	0	0	0	0 bytes
<b>Total</b>				

# FolderShare permissions

Permission	Anonymous user	Authenticated user	Data manager	Administrator
<b>FolderShare</b>				
Administer files and folders <i>Warning: Give to trusted roles only; this permission has security implications.</i> Administer public, private, and shared files and folders. Create, delete, view, download, edit, and change the ownership of content owned by any user.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Author files and folders Create, delete, view, upload, download, and edit files and folders owned by the user, and by other users that grant author access using folder sharing.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Create and share top-level folders Create and adjust settings for sharable top-level folders that group content that may be made public, kept private, or shared with specific users.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
View files and folders View and download files and folders owned by the user, and by other users that grant view access using folder sharing.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**FOR USERS**

The screenshot shows a user interface for managing folders. At the top, there's a blue header bar with a 'Folders' button. Below it is a 'Home' link. The main area has a title 'Folders'. Underneath is a navigation bar with three buttons: 'Personal', 'Shared', and 'Public'. The 'Public' button is highlighted with a yellow arrow pointing to it from the text 'Public top folders'. To the right of the navigation bar is a 'Menu' button with a list icon. A yellow arrow points to the 'Data share' row from the text 'Top folders shared with you'. Another yellow arrow points to the 'Project One' row from the text 'Top folders owned by you'. The main content area displays two rows of folder information:

Name	Modified	Status	Owner	Size
Data share	10/18/2017 - 22:12	Public	demo	191.96 KB
Project One	10/20/2017 - 03:00	Shared	demo	1.12 MB

Below the table, it says '2 items'.

Folders may have a description

Top folders owned by you

Top folders shared with you

Public top folders

These lists display top level folders

Folders

Home

## Folders

Personal Shared Public

New Folder

Upload Files

Download

Edit

Rename

Delete

Copy

Duplicate

Move

Share Folder Tree

Compress

Uncompress

Menu options – with no selection

	Modified	Status	Owner	Size
... viewable. Both Mary and John have Author privileges. Integer posuere erat a ante venenatis dapibus posuere...	10/18/2017 - 22:12	Public	demo	191.96 KB
Authored by Mary, but can only be Viewed by John. Vivamus sagittis lacus vel augue laoreet rutrum faucibus ...	10/20/2017 - 03:00	Shared	demo	1.12 MB
2 items				

Home

## Folders

Personal Shared Public

New Folder Upload Files

Download Folder... Edit Folder... Rename Folder...

Delete Folder... Copy Folder... Duplicate Folder Move Folder...

Share Folder Tree... Compress Uncompress

Menu options – with selection

	Modified	Status	Owner	Size
viewable. Both Mary and John have Author privileges. Integer posuere erat a ante venenatis dapibus posuere...	10/18/2017 - 22:12	Public	demo	191.96 KB
authored by Mary, but can only be Viewed by John. Vivamus sagittis lacus vel augue laoreet rutrum faucibus...	10/20/2017 - 03:00	Shared	demo	1.12 MB

2 items

## Sharing form to restrict access

### Share "Project One" Folder Tree

Share all files and folders in this folder tree.

User	Access
	None   View   Author
Anonymous (any web site visitor) <i>Anonymous users do not have FolderShare module author permission, so they cannot be granted author access.</i>	<input checked="" type="radio"/> <input type="radio"/>
john	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>
mary	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>

[Save](#)

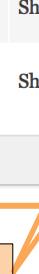
# Project One

Name ▾		Modified	Status	Owner	Size
<a href="#">data</a>	Certain structured formats such as CSV, JSON and HTML table can be automatically visualized	10/20/2017 - 03:00	Shared	demo	6.92 KB
<a href="#">doc.pdf</a>	Every file may have a description.	10/20/2017 - 03:23	Shared	demo	83.86 KB
<a href="#">images</a>	Every folder may have a description in rich text.	10/20/2017 - 03:24	Shared	demo	1.03 MB
<a href="#">progress_bars.ipynb</a>	Every file may have a description in rich text.	10/20/2017 - 03:25	Shared	demo mary	4.2 KB

4 items

**Owner:** demo  
**Modified:** 10/20/2017 - 03:00  
**Description:** This project may be *Authored* by [Mary](#), but can only be *Viewed* by [John](#).

Different users



Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor. Curabitur blandit tempus porttitor. Donec sed odio dui. Maecenas sed diam eget risus varius blandit sit amet non magna.

- Nullam id dolor id nibh ultricies vehicula ut id elit. Etiam porta sem malesuada magna mollis euismod.
- Cras justo odio, dapibus ac facilisis in, egestas eget quam.
- Praesent commodo cursus magna, vel scelerisque nisl consectetur et.
- Duis mollis, est non commodo luctus, nisi erat porttitor ligula, eget lacinia odio sem nec elit.

Hello	World
Ace	Base
Uno	Dos

Integer posuere erat a ante venenatis dapibus posuere velit aliquet. Donec sed odio dui. Vestibulum id ligula porta felis euismod semper. Maecenas sed diam eget risus varius blandit sit amet non magna. Nullam quis risus eget urna mollis ornare vel eu leo. Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor.

# Project One

Name ▾		Modified	Status	Owner	Size
<a href="#">data</a>	Certain structured formats such as CSV, JSON and HTML table can be automatically visualized	10/20/2017 - 03:00	Shared	demo	6.92 KB
<a href="#">doc.pdf</a>	Every file may have a description.	10/20/2017 - 03:23	Shared	demo	83.86 KB
<a href="#">images</a>	Every folder may have a description in rich text.	10/20/2017 - 03:24	Shared	demo	1.03 MB
<a href="#">progress_bars.ipynb</a>	Every file may have a description in rich text.	10/20/2017 - 03:25	Shared	mary	4.2 KB

4 items

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- Cras justo odio, dapibus ac facilisis in, egestas eget quam.
- Praesent commodo cursus magna, vel scelerisque nisl consectetur et.
- Duis mollis, est non commodo luctus, nisi erat porttitor ligula, eget lacinia odio sem nec elit.

Hello	World
Ace	Base
Uno	Dos

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# Project One

Name	Modified	Status	Owner	Size
<a href="#">data</a> Certain structured formats such as CSV, JSON and HTML table can be automatically visualized	10/20/2017 - 03:00	Shared	demo	6.92 KB
<a href="#">doc.pdf</a> Every file may have a description.	10/20/2017 - 03:23	Shared	demo	83.86 KB
<a href="#">images</a> Every folder may have a description in rich text.	10/20/2017 - 03:24	Shared	demo	1.03 MB
<a href="#">progress_bars.ipynb</a> Every file may have a description in rich text.	10/20/2017 - 03:25	Shared	mary	4.2 KB
4 items				

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- Cras justo odio, dapibus ac facilisis in, egestas eget quam.
- Praesent commodo cursus magna, vel scelerisque nisl consectetur et.
- Duis mollis, est non commodo luctus, nisi erat porttitor ligula, eget lacinia odio sem nec elit.

Hello	World
Ace	Base
Uno	Dos

Every folder and file may add a description.  
(Formatted text field aka Body field in Drupal's Node)

Integer posuere erat a ante venenatis dapibus posuere velit aliquet. Donec sed odio dui. Vestibulum id ligula porta felis euismod semper. Maecenas sed diam eget risus varius blandit sit amet non magna. Nullam quis risus eget urna mollis ornare vel eu leo. Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor.



# Project One

 More Options	Menu options change on selection				
	Modified	Status	Owner	Size	
New Folder	10/20/2017 - 03:00	Shared	demo	6.92 KB	
Upload Files					
Download Folder...	nats such as CSV, JSON and HTML table can be automatically visualized	10/20/2017 - 03:23	Shared	demo	83.86 KB
Edit Folder...					
Rename Folder...					
Delete Folder...	escription.	10/20/2017 - 03:24	Shared	demo	1.03 MB
Copy Folder...					
Duplicate Folder	a description in rich text.				
Move Folder...					
Share Folder Tree...	escription in rich text.	10/20/2017 - 03:25	Shared	mary	4.2 KB
Compress Folder					
Uncompress					

**Owner:** demo

**Modified:** 10/20/2017 - 03:00

**Description:** This project may be *Authored* by [Mary](#), but can only be *Viewed* by [John](#).

Vivamus sagittis lacus vel augue laoreet rutrum faucibus dolor auctor. Curabitur blandit tempus porttitor. Donec sed odio dui. Maecenas sed diam eget risus varius blandit sit amet non magna.

- Nullam id dolor id nibh ultricies vehicula ut id elit. Etiam porta sem malesuada magna mollis euismod.
- Cras justo odio, dapibus ac facilisis in, egestas eget quam.
- Praesent commodo cursus magna, vel scelerisque nisl consectetur et.
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Hello	World
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# data



Name ▲	Modified	Status	Owner	Size
<a href="#"> Apple assets, 2008-2009.htm</a> Every file may have a description in rich text.	10/20/2017 - 03:25	Shared	demo	1.04 KB
<a href="#"> Benchmark of original Matlab image preprocessing times.json</a> Every file may have a description in rich text.	10/20/2017 - 03:26	Shared	demo	1.82 KB
<a href="#"> Benchmark of revised image preprocessing times.json</a> Every file may have a description in rich text.	10/20/2017 - 03:26	Shared	demo	795 bytes
<a href="#"> Cost breakdown of Google Nexus 7.json</a> Every file may have a description in rich text.	10/20/2017 - 03:26	Shared	demo	798 bytes
<a href="#"> csv-table.good.simple.csv</a> Every file may have a description in rich text.	10/20/2017 - 03:26	Shared	demo	68 bytes
<a href="#"> Image classification work breakdown schedule.json</a> Every file may have a description in rich text.	10/20/2017 - 03:26	Shared	demo	1.18 KB
<a href="#"> OpenGL mesh memory use.csv</a> Every file may have a description in rich text.	10/20/2017 - 03:27	Shared	demo	1.27 KB

7 items

**Owner:** demo**Modified:** 10/20/2017 - 03:00**Description:** Certain structured formats such as CSV, JSON and HTML table can be automatically visualized

## FolderShare comments

demo

Wed,

10/18/2017

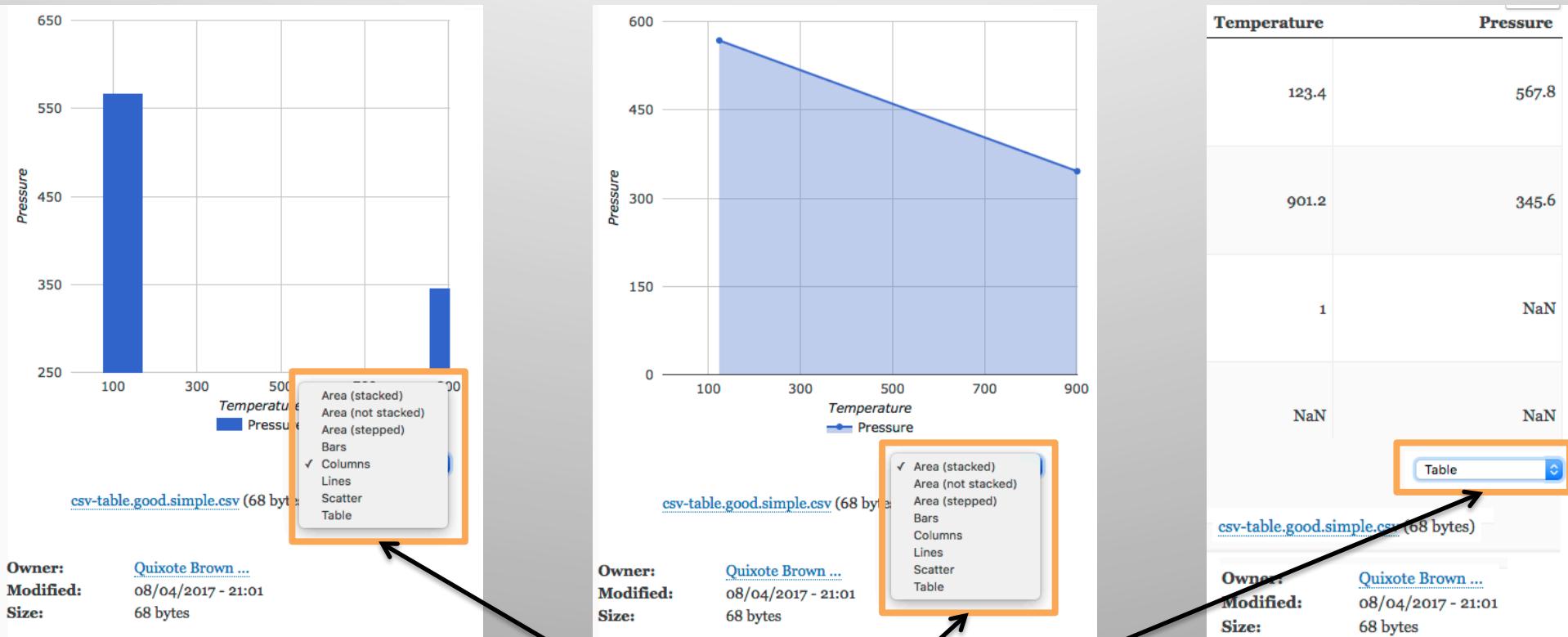
- 22:50

[Permalink](#)[Donec id elit non mi porta...](#)

Donec id elit non mi porta gravida at eget metus. Donec sed odio dui.

[Edit](#) [Reply](#)

# Quick visualization of CSV & JSON files



Visualizations can be switched interactively to different chart types

# Sample commands

```
foldershare --help
```

```
foldershare --host http://demo.seedme.co
```

```
help
```

```
$ foldershare --help
Usage is: foldershare [HOST_OPTIONS] [COMMAND] [OPTIONS]

Create, delete, change, and manage files and folders on a remote web site
that uses the FolderShare module.
```

## Commands

config	Show the host administrator configuration.
cp	Copy files and folders.
get	Download files and folders.
ls	List files and folders.
mkdir	Make new folders.
mv	Move files and folders.
put	Upload files and folders.
rm	Remove files or folders.
rmdir	Remove empty folders.
stat	Show the status of files and folders.
update	Update fields on files and folders.
usage	Show the user's storage use.
version	Show version numbers.

```
Add "--help" after any command to show its description and flags.
```

## Host and account

```
All commands require a remote host and account:
```

--host HOSTNAME	Select the host (and optional port) for the site.
--username NAME	Specify the user login name on the site.
--password PASS	Specify the user password on the site.

## Example:

```
foldershare --host myhost --username me --password pw ls /
```

```
If the username and/or password are omitted, the command will prompt for them.
```

## Additional options

--help	Show this help information.
--verbose	Be verbose while performing the operation.
--version	Show application version numbers.
--format type	Select how information is displayed: auto (default) Use an operation-specific default full Show full-detail nested-array output keyvalue Show a table of key-value pairs linux Show a Linux-style output text Show key-value pairs as text

```
For Linux/macOS/BSD-style commands, the format type defaults to 'linux'
and output is formatted similar to those OS commands.
```

## Example:

```
foldershare --host myhost --format full stat /myfolder
```

# Sample command line interaction

```
foldershare --help
foldershare --host http://demo.seedme.org --user dave --password 'cliRocks!'

help

ls --help
ls /
ls -l "/Classification Collection"
ls -l "/Classification Collection/Preliminary Results"

mkdir --help
mkdir "/test"
mkdir "/test/data"

upload --help
upload "plots/villi.png"      "/test"
upload "plots/composite.png"   "/test"

Upload "sample-small-data/OpenGL mesh memory use.csv"          "/test/data"
Upload "sample-small-data/Image classification breakdown schedule.json" "/test/data"

download --help
download "/test" "/Users/amit/downloads"

rm --help
rm -rf "/test"
```

# SeedMe2 – Target users/Use cases

- **Researchers**
  - Collaboration hub for a project or personal website
- **Custom project repositories**
  - Include project specific customization (e.g. taxonomy, keywords)
- **Developers**
  - Integrate your scientific application
- **Science gateways**
  - Data sharing
  - Data publishing
  - Data escrow service
- **CyberInfrastructure providers**
  - Offer SeedMe2 platform to your user base/communities

## Coulomb Implosion

# Real usage by physicists

Name	Modified	Status	Owner	Size
EPOCH input deck	03/13/2018 - 18:05	Shared		4.25 KB
n_e	03/13/2018 - 18:07	Shared		6.58 MB
n_i	03/13/2018 - 18:07	Shared		6.33 MB
Total electric field	03/13/2018 - 18:08	Shared		5.65 MB
Total electric field [zoom]	03/13/2018 - 18:10	Shared		1.2 MB

5 items | [Image slideshow](#)

### Owner:

Modified: 03/13/2018 - 17:52

PIC simulations of a rectangular plasma with a cavity irradiated by 4 laser pulses.

$\lambda = 1 \mu\text{m}$  - laser wavelength;

$I = 5 \times 10^{18} \text{ watt/cm}^2$  - peak intensity of each laser pulse;

$n_e = n_i = 30n_{crit}$  - initial electron and ion densities;

$R = 60 \text{ nm}$  - radius of the cavity;

cell size is 2 nm by 2 nm; 20 electron macro-particles and 20 ion macro-particles per cell;

Laser electric field is in the plane of the simulation;

Each pulse is  $\Delta t = 20 \text{ fs}$  long, with the field envelope given by  $(1 - \cos(2\pi t/\Delta t))/2$ .

# Deployment/service options

## **DIY - Run your own instance (Your branding + domain)**

- On your own hardware
- Cloud hosted

## **Provider/vendor runs an instance**

- Your institution
- CI centers or IT services
- Commercial vendors

## **Cloud service (Our domain & branding)**

# Try it yourself!

**Explorers welcome (web browser needed)**

Trial website: [sandbox.seedme.org](https://sandbox.seedme.org)

**Developers invited**

Download code: <https://dibbs.seedme.org/downloads>



Amit Chourasia, David Nadeau, Dmitry Mishin & Michael Norman

**San Diego Supercomputer Center | University of California San Diego**

## Acknowledgements

All users and application integrators for their valuable feedback

## National Science Foundation

This material is based upon work supported by the National Science Foundation under Grant No. ACI-1235505 and ACI-1443083

"Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation."

## Talk to us

amit @ sdsc.edu

Keen to learn about potential uses cases in your work

## Tutorial: Thursday afternoon

Building data centric website for research projects and research groups

### Requirements

1. Install docker
2. Download start/final images (~ 1.2GB)