

# GRAV

THE MODERN  
FLAT-FILE  
CMS

May 2019

# GRAV

## CREATING FASTER & BETTER WEBSITES WITH A FLAT-FILE CMS

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NLUUG Conference

01.

WHO AM I?

# WHO AM I? AND HOW DID I GET HERE?

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Some info into my background and experience...



Krista Lance - Genesee - Unsplash



ANDY MILLER  
Web Kahuna  
[@rhuk](#) - Twitter



## MY WEB CV

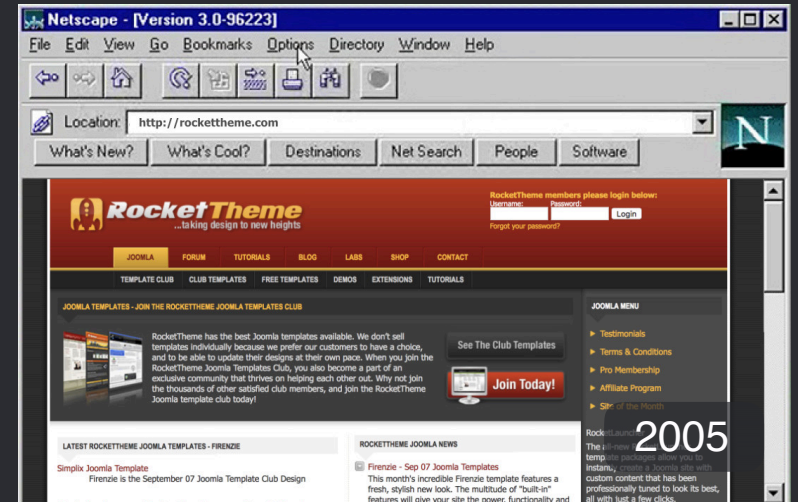
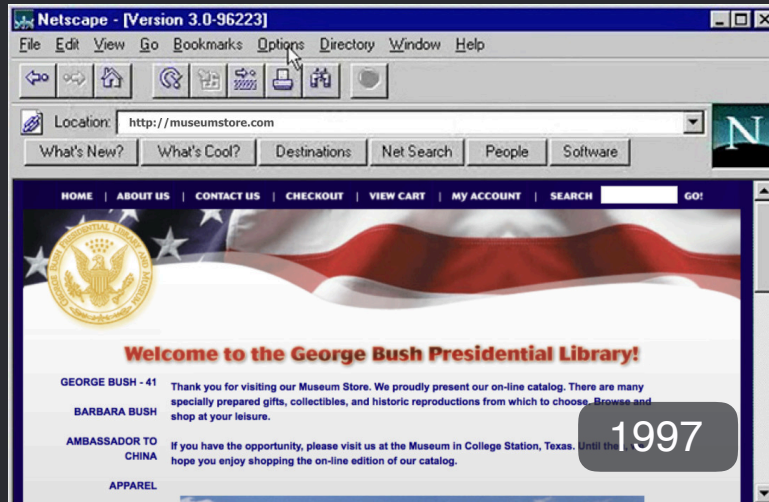
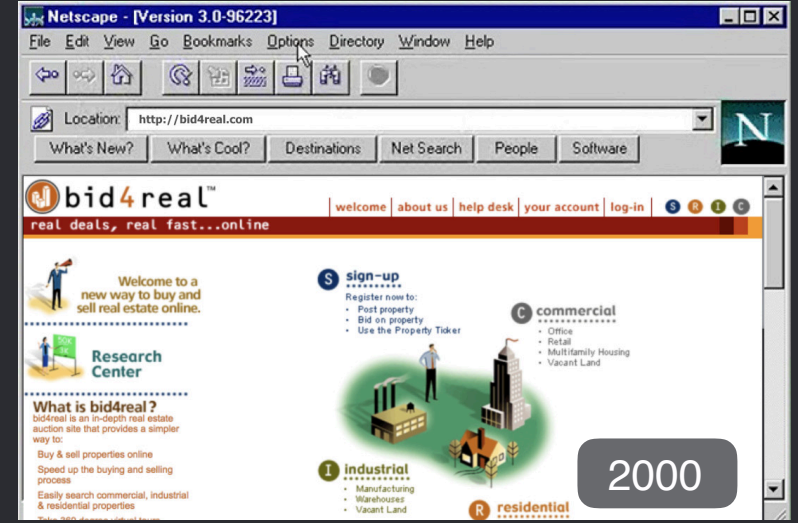
- Web developer with 25 years experience
- Co-founder of Joomla CMS
- CEO of RocketTheme - Premium themes for open source CMS platforms
- Senior Partner - Trilby Media - Grav professional services
- Creator of Grav



## PASSIONS

Travel, Formula 1, Football (proper one), Cars, Lego, Beer

# ANCIENT HISTORY



02.

THE WHY OF IT

# WHY CREATE ANOTHER CMS?

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Another CMS? Do we really need that?

# PROBLEMS WITH EXISTING CMSes

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## LACK OF PERFORMANCE

Most platforms are built with performance as an afterthought



## COMPLEXITY

Existing platforms are often very complex making them hard to learn and use



## FORCE DESIGN CHOICES

Existing platforms force you to adapt your design to them, not the other way around



## EXTENSIBILITY

Majority of platforms provide some plugins, but they are often complex to create



## SECURITY & UPDATES

Most platforms don't put a priority on security or easily updating core and plugins



## EXTENSIBLE VIA PLUGINS

Be able to be fully extensible by flexible plugin architecture to easily allow enhanced functionality



## PAINFUL TO WORK WITH

It's no fun to work with platforms that require many hoops, or are very structured



## UNFRIENDLY LICENCES

Simple to install with minimal server requirements

# REQUIRED FEATURES

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## FAST

It needed to be fast right out of the box running on cheap modern hardware



## FLAT-FILE BASED

No troublesome databases to slow development and complicate deployment



## MARKDOWN CONTENT

Markdown is a simple format that can be quickly learnt and protects from bad HTML



## OPEN SOURCE

Flexible license that allows simple extension and incorporation of other OS libraries



## TWIG TEMPLATING

Powerful templating language that is well known, quick, and provides lots of features



## EXTENSIBLE VIA PLUGINS

Effortlessly extend the core functionality with an easy-to-write plugin architecture



## EASY INSTALL

Simple to install with minimal server requirements



## FUN TO USE

Intuitive design philosophies with many powerful features at your fingertips



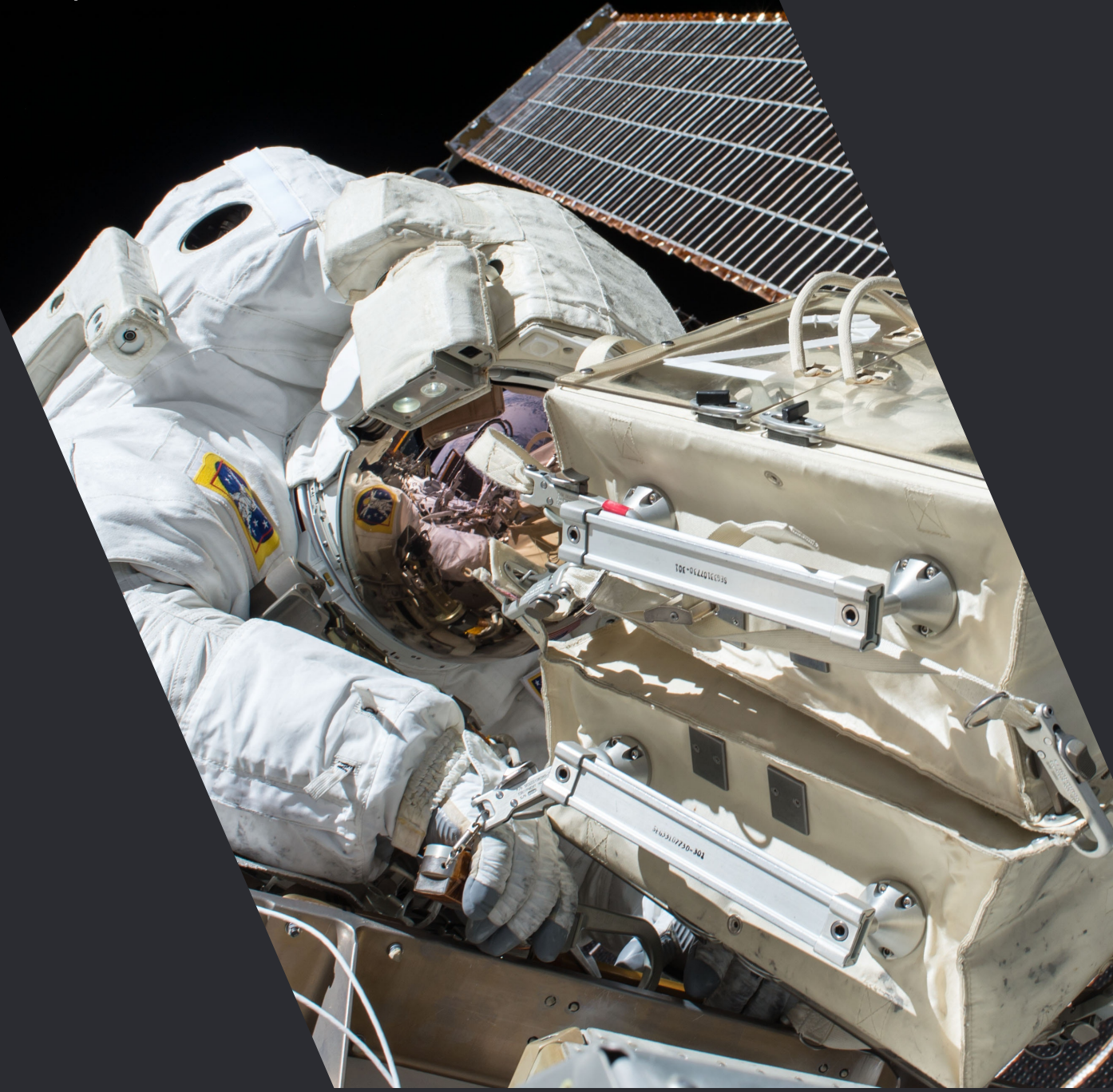
03.

BUILDING IT

# GRAV - A MODERN CMS

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So what does Grav bring to the table?



# GRAV - A NEW MODERN CMS

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## 01. CRAZY FAST!

Grav has focused on speed and optimization from day one! Everything comes back to this

## 02. MODERN FEATURES

SEO-Friendly, multi-language, multi-site capabilities built-in



## 03. PACKAGE MANGER

Grav includes a powerful CLI GPM system to install, update, and remove functionality

## 04. POWERFUL PLUGINS

Grav is intentionally minimal, it can really flex it's muscles with powerful plugins and themes



## 05. GREAT SUPPORT

An amazing community built on GitHub, Documentation, Discord Chat, and Discourse forums

## 06. BEST OF BREED TECH

Grav uses the most well known and most robust 3rd party libraries

Flat-file Architecture

Extensive Documentation

Package Manager

Awesome Technology

Multi-Site Capabilities

Environment Configurations

Lifecycle Deployments

CLI Tools

Routing & Redirection

## CORE FEATURES

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Simple Backup / Restore

Debugging & Logging

Instant Install

Flexible Ways to Create & Sync Content

Smart Caching

Powerful Configuration Overrides

Users & Roles

SEO Friendly

Skeleton Packages

HTML or Markdown Content

Version Control + Sync Support

Modular Pages

Retina Image Support

Built-in Media Types

Custom Fields

Automatic Page & Link Handling

## CONTENT FEATURES

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Various Plugin Events

Flexible Taxonomies

Page-level Overrides

Powerful Collection Handling

Automatic Page Image Handling

Image Media Processing

HTML/JSON/XML Support

Multi-Language Support

Enhanced Twig Filters & Functions

Theme Inheritance

No Design Restrictions

CSS Framework Agnostic

## THEMING FEATURES

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Asset Manager

Powerful Twig Templating

Extend Twig with Plugins

Access to Plugin Events

Extensive List of Plugins (~300)

Optimized for Performance

Extensible by Design

Documented Lifecycle

## PLUGIN FEATURES

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Minimal Code Required

Simple to Write

Boat-loads of Event Hooks

Generator CLI Tools

04.

GETTING STARTED

# GETTING UP AND RUNNING

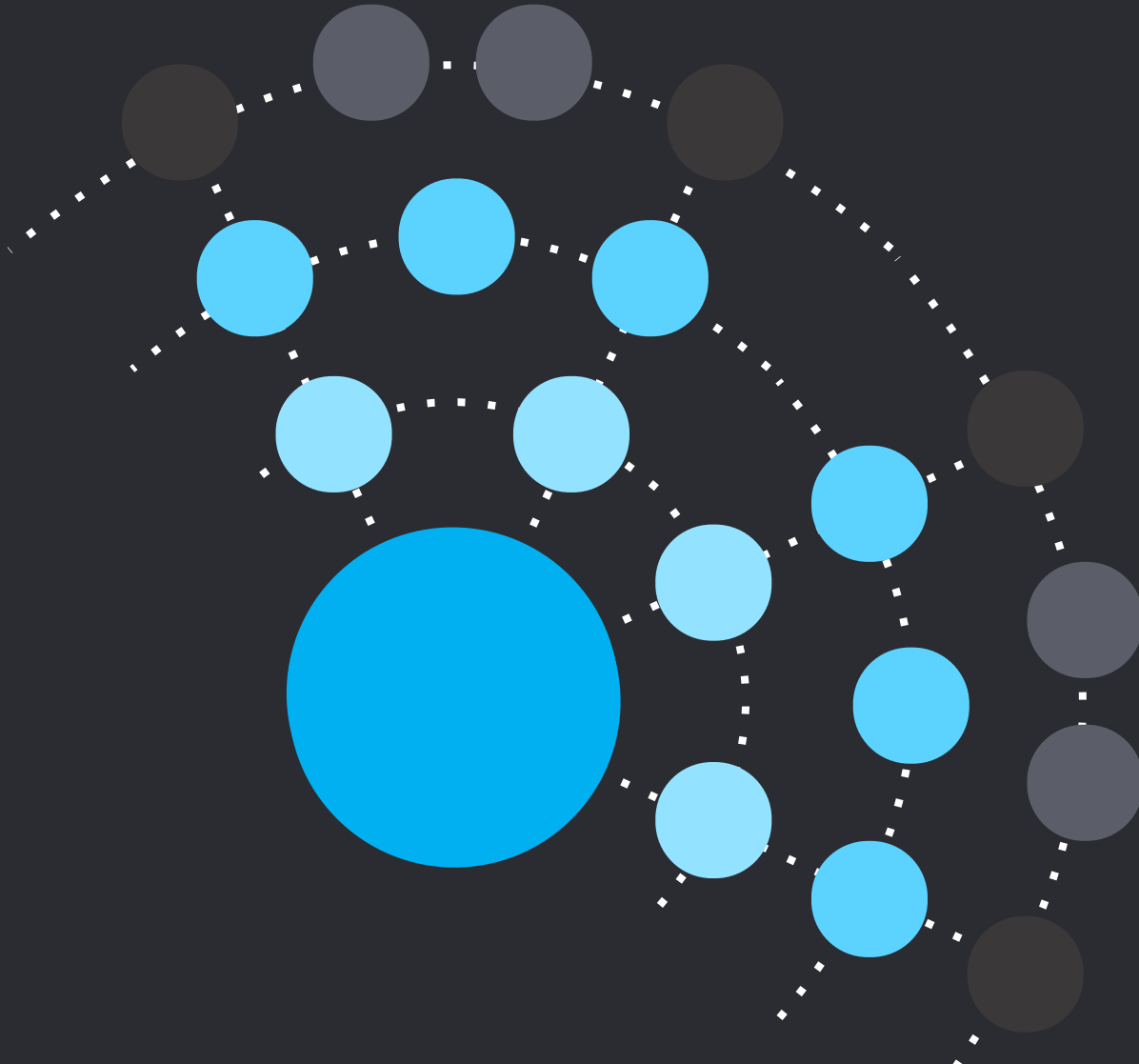
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The easy way, and then the better way...



# INSTALLATION STEPS

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01. Download Grav from <https://getgrav.org/download>
02. Unzip the ZIP archive
03. Copy the entire folder to your web server's web root
04. Point your browser at the webserver
05. Job Done!!!

# DEMO TIME

1. Demo with built-in PHP webserver:

```
php -S localhost:8888 system/  
router.php
```

2. Demo with Apache web server





05.

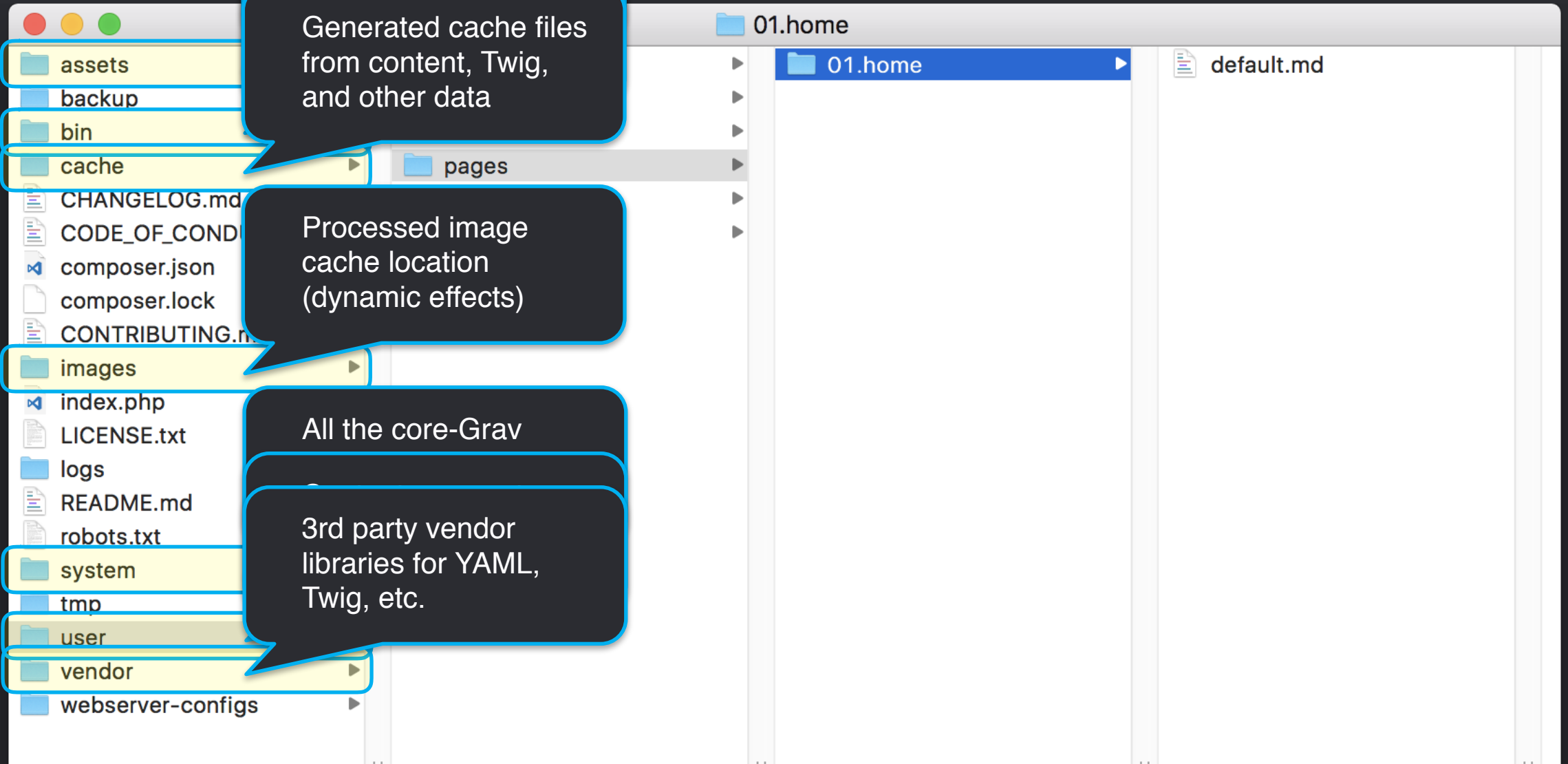
CORE CONCEPTS

# THE GRAV BASIC PRINCIPALS

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Just enough to get you started...

# STRUCTURE OVERVIEW



Folder that will hold

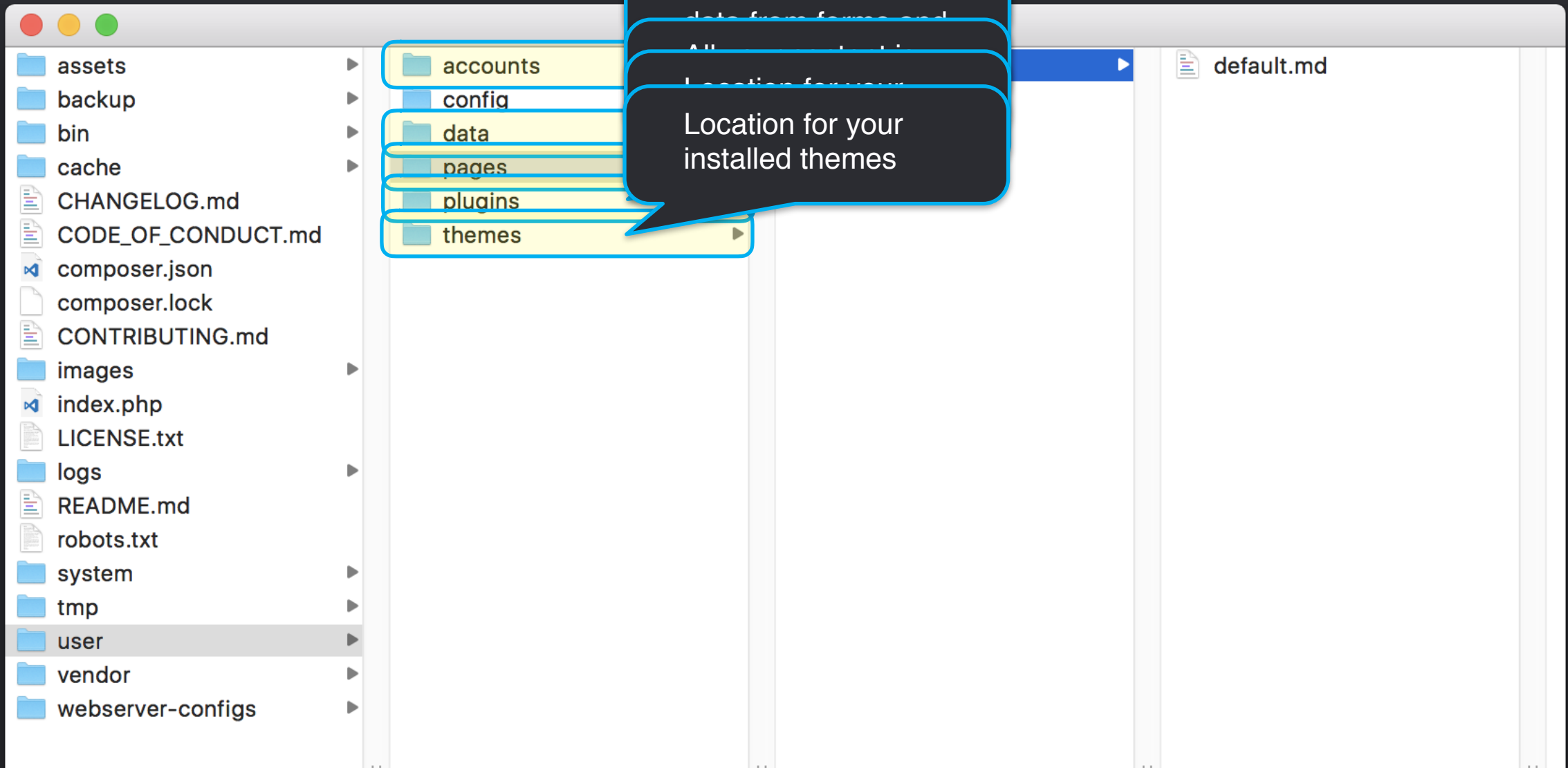
Generated cache files  
from content, Twig,  
and other data

Processed image  
cache location  
(dynamic effects)

All the core-Grav

3rd party vendor  
libraries for YAML,  
Twig, etc.

# FILE STRUCTURE OVERVIEW



# PAGES FOLDER

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- Each page is stored in its own folder. (e.g. **01.home**)
- Each page is represented by a markdown file (e.g. **default.md**)
- Images and other media associated with the page can also be in this folder
- Multi-language versions of the content can be stored here too (e.g. **default.fr.md**)
- Numeric prefix denotes order and visibility.
- Folder name denotes the default route
- Markdown filename denotes the default Twig "template" to render (e.g. **default.html.twig**)

# MARKDOWN FILE

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- The markdown file contains an optional YAML-based front-matter section
- Page options are configured in this front-matter. These are purely optional but quite extensive: <https://learn.getgrav.org/content/headers>
- Grav makes things simple with defaults, but these can be overridden in front-matter.
- The markdown file can contain Markdown, Twig (when enabled), Shortcodes (via plugin), and even pure HTML

# MARKDOWN FILE

```
~/workspace/cmsexpo/Sites/grav/user/pages/01.home/default.md  
default.md  
---  
title: Home  
header_color: '#00c'  
---  
  
# Grav is Running!  
## You have installed Grav successfully  
  
Congratulations! You have installed the Base Grav Package that provides a simple page  
and the default antimatter theme to get you started.  
  
!!! If you want a more full-featured base install, you should check out [Skeleton  
packages available in the downloads](http://getgrav.org/downloads).  
  
### Find out all about Grav
```

Page Front-matter  
(YAML Format)

Page Content (Markdown  
or HTML Format)

# YAML CONFIGURATION

```
~/workspace/grav-demo/Sites/grav/user/config/system.yaml
system.yaml x
1 absolute_urls: false
2
3 home:
4   alias: '/home'
5
6 pages:
7   theme: antimatter
8   markdown:
9     extra: false
10  process:
11   markdown: true
12   twig: false
13
14 cache:
15   enabled: true
16   check:
17     method: file
18   driver: auto
19   prefix: 'g'

~/workspace/trilby/grav-embl/system/blueprints/config/system.yaml
system.yaml x
1 title: PLUGIN_ADMIN.SYSTEM
2
3 form:
4   validation: loose
5   fields:
6
7     content:
8       type: section
9       title: PLUGIN_ADMIN.CONTENT
10      underline: true
11
12     fields:
13       home.alias:
14         type: pages
15         size: large
16         classes: fancy
17         label: PLUGIN_ADMIN.HOME_PAGE
```

# DEMO TIME

1. Configuration modification
2. Edit an existing page
3. Create a new page
4. Page linking
5. Add some media and use media functions to manipulate the media
6. Override header options
7. Add custom header fields
8. Use Twig to access header values





06.

PLUGINS

# EXTENDING GRAV WITH PLUGINS

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Learn how easy it is to extend Grav and add functionality...



# CORNUCOPIA OF PLUGINS

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## ADMIN PLUGIN

A powerful plugin that provides an optional web interface for managing your site



## CONTENT PLUGINS

Plugins that can manipulate content, such as shortcodes, markdown, and diagrams



## DYNAMIC VISUAL PLUGINS

Slideshows, tabbers, graphs, ratings, comment systems, etc



## SEO & METADATA

Plugins to optimize SEO results and dynamically generate metadata for 3rd party services



## APPLICATIONS

Shopping carts, galleries, search engines, directories, data managers, etc



## EXTENDING OTHER PLUGINS

Custom form fields, form actions, admin styles, auto generating data, custom libraries, etc



## CLI COMMANDS

Custom scripts and CLI commands to perform utility tasks, e.g. devtools



## API INTEGRATIONS

Plugins that pull or push data via 3rd party API methods, e.g. snipcart

# INSTALLING A PLUGIN

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01. Navigate to the root of your Grav installation
02. `bin/gpm index`  
to list available plugins
03. `bin/gpm install highlight`  
to install the highlight plugin
04. Modify the plugin configuration in:  
`user/config/plugins/highlight.yaml`



# INDEX

Release version:  
Stable or Testing

GPM Releases Configuration: **Stable**

Plugin name & slug  
for identification

Current version and  
install status

## PLUGINS [ 215 ]

Count	Name	Slug	Version	Installed
1	Staticfilecache	staticfilecache	v1.0.0	not installed
2	Srcset Fallback	srcset-fallback	v1.0.0	not installed
3	Embed	embed	v1.0.0	not installed
4	Cachebuster	cachebuster	v1.0.0	not installed
5	filesource	filesource	v0.2	not installed
6	TopicMenu	topicmenu	v1.1.0	not installed
7	Archive Plus	archive_plus	v1.3.2	not installed
8	File Content	file-content	v1.0.0	not installed
9	Smileys	smileys	v1.2.1	not installed
10	Shortcodes	shortcodes	v1.2.0	not installed
11	Gitter	gitter	v1.0.0	not installed
12	Mautic	mautic	v1.0.0	not installed
13	Hitbox	hitbox	v1.0.0	not installed
14	Twitch	twitch	v1.1.0	not installed
15	Leaflet	leaflet	v1.0.1	not installed
16	SocialButtons	socialbuttons	v1.0.3	not installed
17	DropCaps	dropcaps	v1.3.4	not installed
18	Markdown Sections	markdown-sections	v0.9.1	not installed

# DEMO TIME

1. Display the available plugins and list of plugins installed
2. Install a plugin and see the immediate impact
3. Modify plugin configuration and see how things change
4. Create a very basic plugin with devtools



# 07.

ADMIN PLUGIN

## ONE **PLUGIN** TO RULE THEM ALL

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Grav's admin plugin provides traditional web-based administration...

Joel Filipe - Unsplash

# ADMIN PLUGIN FEATURES

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## 01. POWERFUL

Grav's admin interface provides powerful features to manage and maintain your Grav powered site

## 03. EASY INSTALL

Can be bundled with Grav or installed via GPM like a regular plugin

## 05. EASY TO USE

Built to be intuitive and easy to use by even novice web users

## 02. JUST THE ESSENTIALS

The admin plugin is intended for managing your site and provides only what you need

## 04. SECURITY

With 2-factor authentication and login flood protection, security is not an afterthought

## 06. EXTENSIBLE

Other plugins can extend and provide additional functionality to the Admin plugin.



# ADMIN OVERVIEW

The screenshot shows the Grav CMS Admin Overview interface. The browser address bar indicates the site is running on localhost. The interface is divided into a left sidebar and a main content area.

**Left Sidebar:**

- GRAV logo
- Andy Miller, Administrator (with profile picture)
- Dashboard
- Configuration
- Pages (2)
- Plugins (3 7)
- Themes (1 1)
- Tools
- Logout

**Main Content Area:**

- Home page title
- Navigation buttons: Eye, Undo, Redo, Add, Copy, Move, Delete, Save
- Tabbed interface with 'Normal' selected (others: Content, Options, Advanced, Expert)
- Title field: Home
- Rich text editor toolbar with icons for undo, redo, bold, italic, strikethrough, link, unlink, image, quote, list, and table.
- Content text:
  - # Say Hello to Grav!**
  - ## installation successful...**
  - Congratulations! You have installed the **Base Grav Package** that provides a **simple page** and the default **Quark** theme to get you started.
  - !! If you see a **404 Error** when you click `Typography` in the menu, please refer to the [troubleshooting guide](http://learn.getgrav.org/troubleshooting/page-not-found) (<http://learn.getgrav.org/troubleshooting/page-not-found>).
  - ### Find out all about Grav**
  - \* Learn about **Grav** by checking out our dedicated [Learn Grav](http://learn.getgrav.org) (<http://learn.getgrav.org>) site.
  - \* Download **plugins**, **themes**, as well as other Grav **skelton** packages from the [Grav Downloads](#)
- Page Media section at the bottom.



Minimal & Intuitive UI

One-Click Installs & Updates

Media Pickers

Custom Page Types

2-Factor Authentication

100% Optional

Notifications

Automatic Page & Link Handling

Useful Statistics

## ADMIN PANEL PLUGIN

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Advanced Form Fields

Multi-Language Support

Simple Editor with Preview

Responsive

Advanced Mode

Extensible with Plugins

Easily Configure Themes & Plugins

Login & Reset Flood Protection

# DEMO TIME

1. Install Admin plugin
2. Setup 2-Factor Authentication
3. Modify some configuration
4. Modify existing page
5. Create a new page
6. Install a Plugin via Admin
7. Install a Theme via Admin
8. Update Grav + Plugins



08.

THEMES

# GRAV THEMES GIVE IT STYLE

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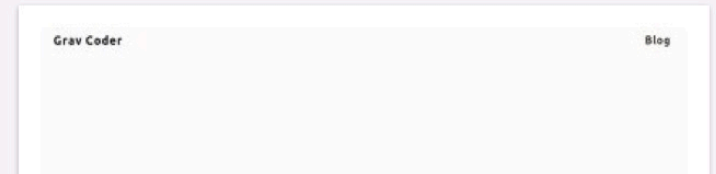
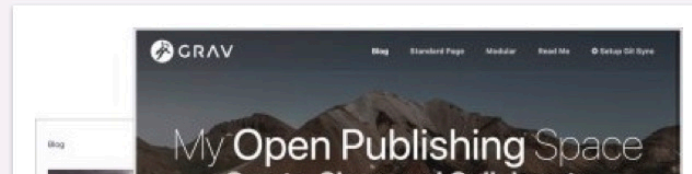
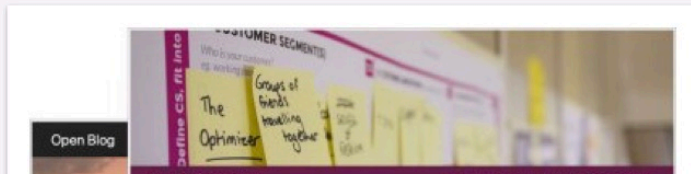
Built with a Twig-powered template engine



[Grav](#)[Skeletons](#) 45[Themes](#) 103[Plugins](#) 290

# Themes

To install a theme, simply type `bin/gpm index` to see available themes, then `bin/gpm install themename` to install it. Read the GitHub documentation carefully to learn how to properly **configure** and **implement** the new functionality in your site.

# HOW THEMES WORK

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- Each page is rendered with a Twig template. (e.g. `default.md` -> `default.html.twig`)
- Twig is a fast and powerful templating engine for PHP (developed by SensioLabs)
- Twig templates are provided by a theme in the `templates/` folder
- Themes also can contain CSS, JS, Images, and Fonts. Anything else you need to render
- Themes support inheritance and can extend a 'base' theme
- Themes can have custom configuration as well as provide their own plugin-like logic
- Blueprints provided by the theme allow custom Admin forms for page types

# DEMO TIME

1. Examine a theme's basic structure
2. Create a new page type
3. Create a simple blueprint that extends the default blueprint to add a custom field
4. Create a very basic theme with devtools



09.

MULTI-LANGUAGE

# MUTLI-LANGUAGE SUPPORT

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Powerful functionality baked right in...

Delfi de la Rúa - Unsplash

# MUTLI-LANGUAGE IS CRITICAL

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# POWERFUL MULTI-LANG FEATURES

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## UNLIMITED LANGUAGES

Grav supports any single language or multiple languages simultaneously



## UNIQUE LANG-BASED PAGES

Each language has it's own markdown page in the format '`default.en.md`'



## LANGUAGES "FALL-BACK"

If a page in a language doesn't exist, Grav falls back to the next language



## CUSTOM ROUTES & SETTINGS

Because each language has it's own page, it also has it's own settings



## LANG-BASED TWIG

As well as unique pages, Grav supports unique Twig templates: '`default.en.html.twig`'



## TRANSLATIONS & OVERRIDES

Each plugin can provide it's own lang strings, and you can also override them if you need



## TRANSLATION COMMANDS

Grav provides tools to translate strings, and arrays in PHP code as well as Twig templates



## WORKS WITH ENVIRONMENTS

Because it's baked in, multi-lang also works with Grav's environment handling

# DEMO TIME

1. Install 'multi-lang' skeleton & admin plugin
2. View the configuration & pages
3. Create a new page and save it in other languages
4. Show admin languages & overriding a lang string



10.

SUMMARY

# KEY GRAV TAKE- AWAYS

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Key things to remember...

Jaime Serrano - Unsplash



# GRAV IS A DYNAMIC CMS

An award-winning community-driven,  
open-source platform

Grav is the most



PHP CMS on Github!

# SOME STATISTICS

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650k Grav core downloads

170 Grav core releases

2 weeks Average time between releases

11,000 Stars on Github

1500 Members on Discord Chat



## FIND OUT MORE

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- ✓ Homepage - <https://getgrav.org>
- ✓ Forum - <https://discourse.getgrav.org>
- ✓ Documentation: <https://learn.getgrav.org>
- ✓ News Feed - <https://getgrav.org/blog.atom>
- ✓ Chat Group - <https://chat.getgrav.org>
- ✓ Github - <https://github.com/getgrav/grav>
- ✓ Twitter - [@getgrav](#)
- ✓ Mailing List - [http://eepurl.com/b41\\_oP](http://eepurl.com/b41_oP)