PANTHEON
UPSTREAMS

A Manager's Overview

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Your Technology Decisions Matter

Managing a web team in today's digital landscape means carefully choosing the right tools to achieve success. Agencies continuously push technology forward. Enterprise businesses strive to shine above their competition. Higher education and nonprofit organizations find new and creative ways to make their message and mission shine loud and clear. Organizational goals vary, but web technology leaders in these industries all share a few common objectives: to continuously improve team efficiency, code quality, and site security. They also tend to share a common challenge: managing large portfolios of websites often means having to decide between enforcing standards and providing individual sites the flexibility to meet unique goals.

Not anymore. Pantheon Upstreams allow the best of both worlds—control over site standards plus customization when needed. This feature—available to any team using Pantheon Enterprise, Pantheon for EDU, or Pantheon for Agencies—sets the bar for developer experience and ease of use. By ensuring your team always starts with well-defined, easily updateable themes, plugins, or modules, development is faster, results are more predictable, and work is more secure.

Read on for the next step in transforming best practices in web development into standard operating procedures.
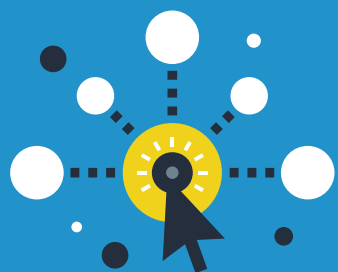
The Open Source Content Management System Advantage

Businesses depend on their ability to share information about their products and services effectively online. Over the last decade, content management systems (CMS) have emerged to address the complexity of reliably publishing and managing this information. As marketing and information technology have evolved, now more than ever, modern CMSs go beyond the traditional website administration interfaces. Many now include:

1. **Customization of design to adhere to branding needs**

2. **Integration with sales or marketing applications**

3. **Ecommerce and fulfillment processing**

4. **Analysis and reporting of visitor traffic patterns**

5. **User support via chat integration**

Implementing a CMS generally follows two main paths: purchase of a license from a company such as Adobe; or, internal implementation of an open source CMS solution—the two most popular being WordPress and Drupal. Most organizations that select the open source option do so for good reason: open source offers powerful flexibility compared to proprietary CMS options, where customization is limited and expensive. Additionally, both Drupal and WordPress have enormous communities where innovations are contributed back to the community by individuals (or community developers) for everyone to use.

Proprietary software vendors often rely on fear, uncertainty, and doubt to position themselves vs open source solutions. They'll try to convince you that security is impossible, or that the software simply cannot scale, when the truth is that this is purely a matter of implementing the right architecture and standard operating procedures. Some of the world's largest websites and most demanding organizations have been successfully running Drupal and WordPress to power their web experiences for a decade.

What proprietary CMS software vendors won't ever mention is that their ecosystem of integrators and consultants is miniscule compared to open source, that almost any customization of their system means a ground-up software development project. Ultimately, their implementations are monolithic and static; not a good fit for modern organizations.

Anatomy of an Open Source CMS

From large enterprises to media to higher education, Drupal and WordPress can both be adapted to work smoothly with a wide range of organizations. Open source CMS code and infrastructure management are traditionally the responsibility of the site owner. This may seem daunting, but in actuality, using Drupal or WordPress means you have thousands of community developers on your team. To better understand this, it's important to understand a bit about the code that makes them work.

A Drupal or WordPress site is generally a combination of code from three types of sources: custom, contributed, and core.

Custom code is unique to each organization or site. It can be simple font size, color settings, or complex integration with internal ERP systems. This code is written by internal teams, or the web agency building and supporting the site.
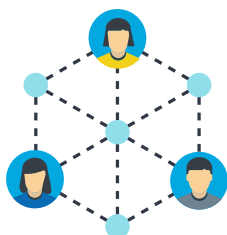
Contributed code refers to blocks of code which may have originated from someone's custom use case, and have been released to the community to download and use. This means hundreds of developers and community members are reviewing, testing, and improving functionality in ways that benefit your site. Both WordPress and Drupal have thousands of available plugins/modules that add a wide range of functionality; from SEO recommendations to Salesforce integration.

Core code is the heart of every WordPress and Drupal site, and accounts for the bulk of basic functionality: the content editing experience, how pages are rendered, and how users are created. Thousands of community developers maintain this code and comprise teams that focus on security, accessibility, documentation, and testing.

The Value of Pantheon Upstreams

Pantheon Upstreams are a system for locking in best practices by managing the three layers of open source code correctly and scalably. A template, or "start state" is created and combines core, contributed, and custom code you choose and package for your organization. From this start state, you can spin up any number of sites. Each has its own resources and can be upgraded if the site's traffic warrants. These sites can be modified, including being managed by a site-specific team or agency, and still be easily updated with new code from the central start state.

Upstreams can define the overall look of a site, while still giving the flexibility to adapt each site according to its use case. This ensures that your team is always working with the latest branding.
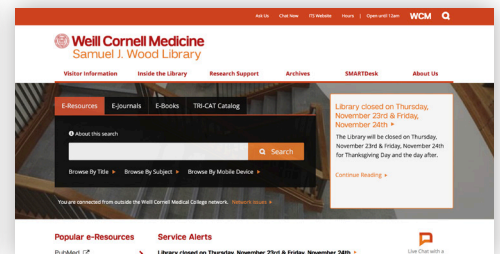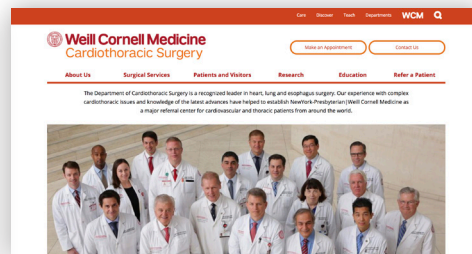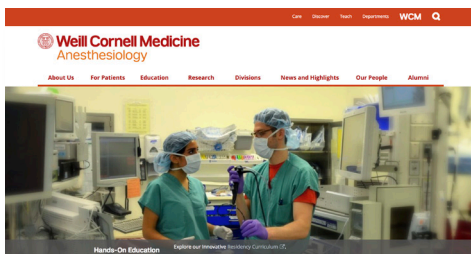

Alternatively, even when sites have similar functionality, they can have vastly different content and theming:
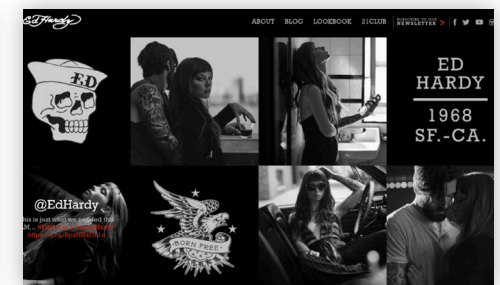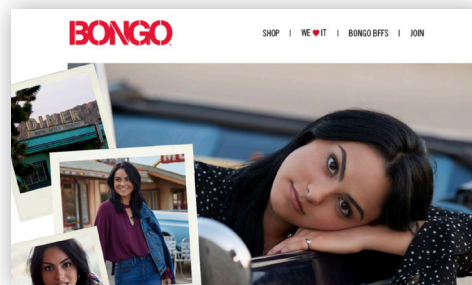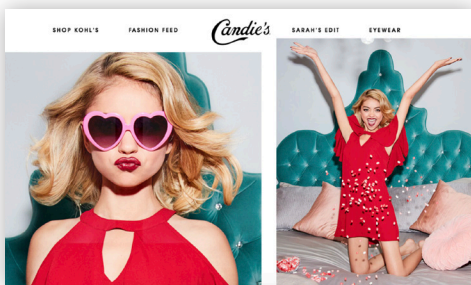
No matter how sites are customized, updates are still easily pulled in to all sites sharing a common Upstream, ensuring only the latest, most secure code is running. Custom Upstreams put complete control in your hands.

Streamlining Means Better Code, Shipped Faster

By removing outdated processes, results become almost immediately visible. Organizations who have implemented Upstreams show a 28 percent increase in code pushes. This indicates a significant shift in how efficiently teams can implement changes.

Average Code Pushes
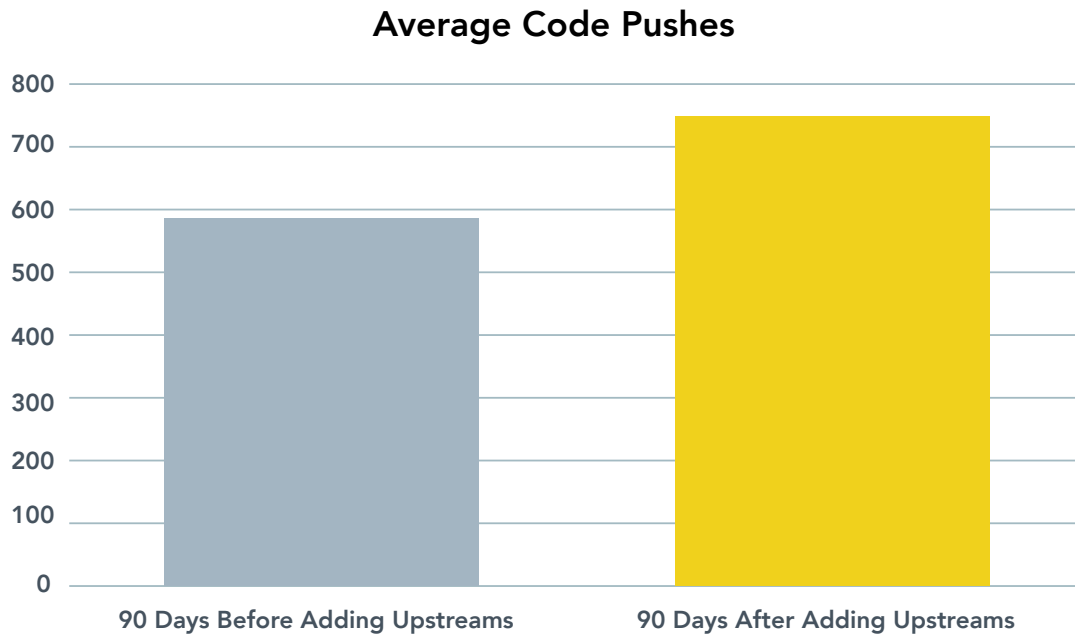
We also find that organizations were able to launch websites at a rate 11% greater after implementation. This indicates there is ample room for improvement in the development lifecycle time through streamlining process with tools like Upstreams.

How do Custom Upstreams work?

With a bit of planning, setting up a Pantheon Upstream is a straightforward process, and our support team is always available to assist. Here are the basic steps:

1. **Create your Upstream:**
   Create the initial configuration, using our (always up-to-date) version of Drupal or WordPress core as the base CMS.
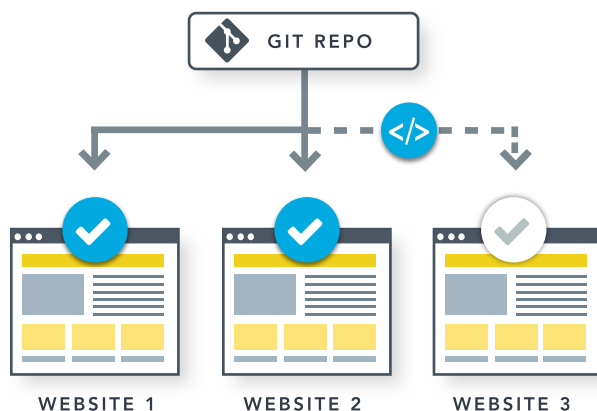
2. **Customize:**
   Add the contributed and custom code needed to meet your technical and brand requirements.

3. **Connect:**
   Connect this new canonical codebase to Pantheon as an upstream source.

4. **Launch:**
   Now you can use this Upstream as a start state for all new sites you create on Pantheon. When you push updates to the Upstream, they will be available at each downstream site.

Great, control is nice. But what is the tangible benefit?

Stop Building From Scratch

A key value of open source CMSs is that your team doesn't begin from zero each time. Efficiently using Upstreams gives your team a head start on each project, saving hours and reducing the risk of missing an important feature. Always use the same base theme or the same ten plugins? Incorporate them into your upstream and you can guarantee the correct version of each is there, every time.

Stop Solving "Unique" Problems

A common realization in the open source CMS community is that very few use cases are specific to a single site. In choosing WordPress or Drupal, you stand on the shoulders of the community. Since both Drupal (major version 8.x) and WordPress (major version 4.x) are mature codebases, currently running in millions of production environments, many complex problems have already been solved. This enables one site to benefit from the community, and in return, allows your team to contribute back when truly unique solutions are created.

Customize Without Massive Technical Debt

While there have been various workarounds to managing many sites simultaneously, Pantheon Upstreams are the only scalable way to handle inevitable customizations that make solutions such as Drupal Multisite brittle and unscalable. Single or small subsets of sites can be customized as needed, while the majority of the codebase remains consistent with the Upstream, so updates can still be easily deployed.

Scale Resources Accurately

When running many sites, each will see different traffic patterns. Unlike older "multisite" architecture, sites can share the same upstream, but each can have the resources they need. This means the a day of record-breaking traffic for any single site doesn't adversely affect others using the same resources. When a single downstream site gets a traffic surge, simply select a plan with more resources and our technology scales you in seconds; no hardware, no downtime, no hassle.

Build Code with Security in Mind

Security is every team member's responsibility, and making sure servers are protected is only part of a holistic security strategy. Open source code is an inherently powerful tool, because hundreds of developers are reviewing and maintaining it. Upstreams extend this power further, allows your team to have precise control of the code across all your sites. Updates can be automatically tested and deployed to all sites connected to an upstream, saving precious time normally spent in security code audits or patching sites individually.

Strictly but Easily Manage Code Access

Using Pantheon's Upstream Workflow also reduces the risk of unauthorized infrastructure access and other types of hacking. Because code managed by Pantheon is encrypted and access is securely authenticated, production environments can be locked down; since humans never need to log in. This protects sites from brute force intrusion and password mismanagement; two common methods for compromising infrastructure.

Make High-quality, Tested Software Your Competitive Advantage

All code contains bugs, and the best way to reduce the impact of bugs is by testing, which is vastly simplified using Upstreams and automation. Automated testing is the quickest way to increase developer efficiency (billable hours or hours working on new features), reduce manual QA hours, and increasingly, the best way to embrace a process where requirements are codified by executable tests. Teams that test their code ship fewer bugs.

Improve Visibility for Your Team

Pantheon Upstreams are canonical sources of code. There are no unexplained changes, or untraceable regressions. Even if a single Upstream is the foundation for hundreds of sites, isolating a single change is a simple command. And whether developing across global teams, or a small group in a single office, being able to work separately as well as in tandem is crucial to effective collaboration.
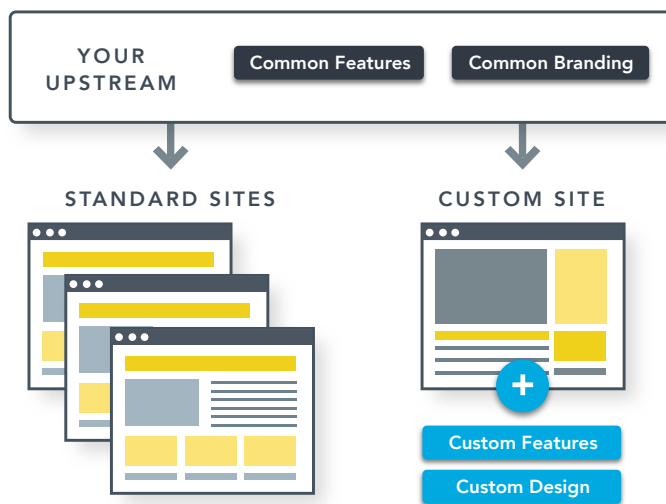
Upstreams in Practice

How can my business use Custom Upstreams on Pantheon?

Companies that already run web properties on Pantheon know that we have built a great ecosystem to manage one or more sites. We combine the fastest hosting environment with a powerful development workflow, and easy-to-use dashboard.

Custom Upstreams take you one step further up the value chain, allowing you to build your own custom start state that you control. Companies formerly limited by their ability to create web properties fast enough to keep up with their own marketing goals now hold the keys to a Formula One racer, warmed up, and ready to go as fast as your imagination can take you.

YOUR UPSTREAM · Common Features · Common Branding

STANDARD SITES · CUSTOM SITE

Custom Features · Custom Design

Build your own start state by adding custom headers, footers, logos, and other branding assets. When you add new content, you are just minutes away from launching a new product, creating a landing page, or even building a SaaS empire around a custom WordPress or Drupal application.

How can my digital agency use Custom Upstreams on Pantheon?

Many agencies have already made the decision to specialize and focus their talents. In fact, agencies often choose Pantheon for this reason; to get out of the server management business and focus on building great sites. Beyond choosing an infrastructure partner, web agencies often decide to focus on specific industries, verticals, or technologies.

Pantheon's Custom Upstreams allow web specialists to build easily supportable and scalable codebases that include exactly the tools they need. Custom code can be combined with contributed plugins or modules, giving your team a head start during development. After launch, updates can be pushed to all sites, ensuring rock solid support and security in a manageable fashion.

For example, agencies that focus on ecommerce often create an upstream which bundles their ecommerce functionality (Drupal commerce or WooCommerce, for example) with payment gateway plugins (PayPal, Stripe, etc.), along with a custom revenue reporting plugin. With Custom Upstreams, core, contributed, and custom code co-exist, and allow agencies to maximize their time without writing custom scripts or using brittle technology.

I run a web team for a university, how can we use Custom Upstreams?

Higher education and similarly structured organizations often face a unique set of challenges: a large and varied set of users, complex branding requirements, and established and regulated processes. Pantheon was built with these organizations in mind, and Custom Upstreams make the varied needs of higher education a stable, manageable process.

Each Upstream can be built on WordPress or Drupal for a specific use case: for each department, professor, club, or administrative unit. They can each have their own custom branding, authentication, permissions, and roles. This makes federated authentication via LDAP or SAML a simple process, and creates "guardrails" to ensure security and uniformity, even with a constantly changing set of users.

Additionally, each site based on a Custom Upstream has its own resources. Thus, it can be scaled according to traffic without affecting other sites. This model also allows for each site to be customized and themed, without becoming disorganized and fragile. Finally, when org-wide changes need to be rolled out, it can be done quickly through the use of our automation tools. Custom Upstreams make managing hundreds or thousands of sites as easy as managing a single site.

Putting It All Together

Though organizational goals vary, businesses, agencies, and higher ed institutions share many of the same technological needs. As a technology manager, achieving your company's goals means choosing tools that provide stability and efficiency. Upstreams provide a stable framework and starting point for development. Upstreams help teams work faster and enable them to deploy more often. They also allow teams to work end to end within a single infrastructure, giving both your team and your website's audience a stable, predictable online experience.

Pantheon Upstreams Success Stories

apigee

Apigee manages over 500 client website portals.

Apigee chose Pantheon Upstreams to deliver true multi-tenancy and ensure each customer would have their own truly isolated portal.

Fairfax County PUBLIC SCHOOLS

The 10th largest school system in the US runs 195 sites.

FCPS uses Pantheon Upstreams to manage hundreds of website with consistent branding, security, and user experience while allowing for flexibility.

ICONIX

Iconix manages over 20 consumer brands websites.

Pantheon Upstreams makes it possible to build and manage unique brand experiences across Iconix's diverse portfolio.

ASU

Arizona State University manages thousands of Drupal sites.

Pantheon Upstreams enable ASU to give their users a responsive, secure, ASU-branded site with the push of a button.