Built to Scale:

Rolling out 100+ Drupal 8 Sites for Fairfax County Public Schools

Brooke Heaton
Senior Developer
Forum One

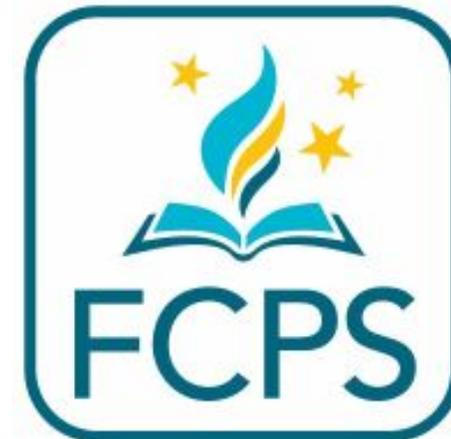# Built to Scale: 100+ D8 Sites for FCPS

Overview

1. The Client
2. The Challenge
3. The Goal
4. Technical Approach
5. Lessons Learned
6. "Wait, what?"

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Client

## Fairfax County Public Schools

- Fairfax County Public Schools system (FCPS) - Fairfax Co., VA
- 10th largest school system in nation, largest in the Baltimore-Washington Area
- 180,000 students enrolled
- 100+ schools and institutions / 100+ sites

Challenge

Fairfax County Public Schools WebSites

- No CMS :/
- 100+ outdated, 'hand-made' webSites
- Outmoded editing practices (Dreamweaver)
- Incongruous platforms, UI and UX (.NET, CF)
- Lack of web services (REST, RSS)
- Inability to centrally manage site users
- No file management system

Fairfax County PUBLIC SCHOOLS
ENGAGE • INSPIRE • THRIVE
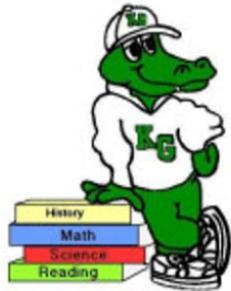
Kings Glen Elementary School
"Building a Positive School Community: A Family Affair"

5401 Danbury Forest Dr., Springfield, VA 22151 | Main Phone: 703.239.4000 | Fax: 703.239.4097 | Attendance: 703.239.4040
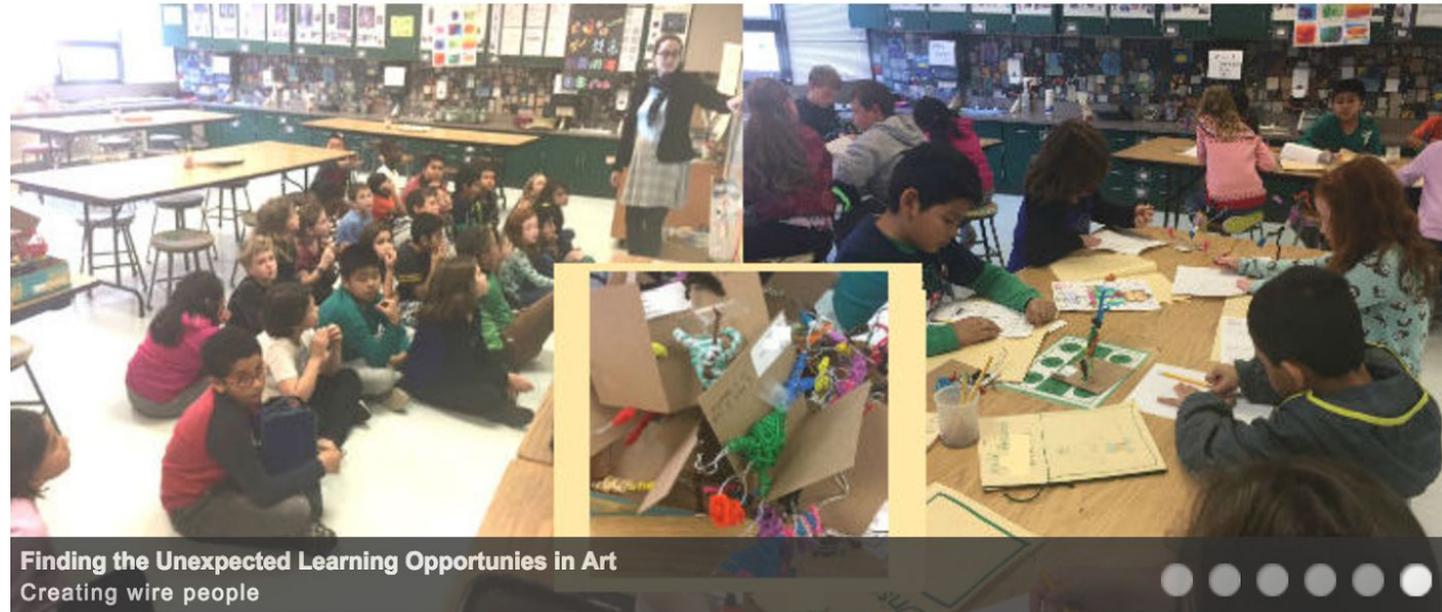
- Home
- About Us ▶
- Attendance
- Calendar
- Library
- Parents ▶
- Programs and Events ▶
- Staff Information ▶
- Supply Lists
- Tuesday TakeHome Folder
- Web Resources ▶

Finding the Unexpected Learning Opportunies in Art
Creating wire people

Welcome to Kings Glen ES!

Upcoming Events:

Upcoming Events
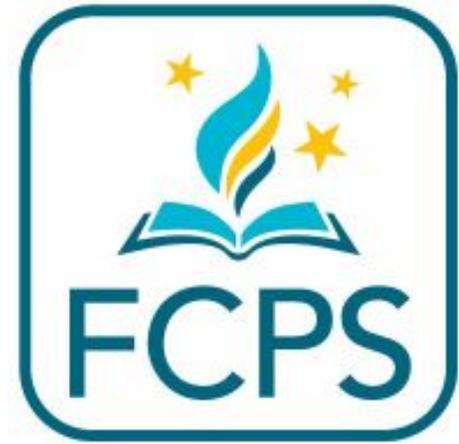
Friday, December 2

Scholastic Book Fair

Goals

A Modern Content Management Framework

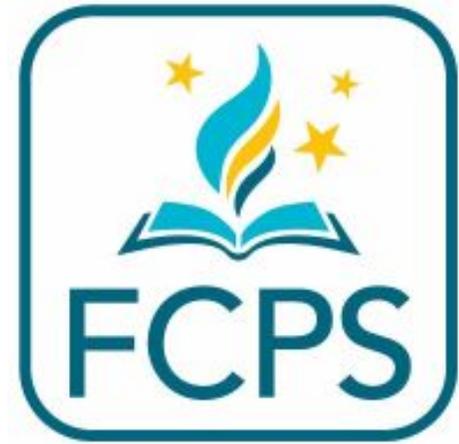- A unified system with a Content Management System for each School
- Standardized overall look and feel for sites
- Customization for individual school Sites
- Syndicate Content from a 'Main' FCPS Site
- Translate Content into School Languages

Goals

A Modern Content Management Framework

- Centrally Manage Users
- Migrate Legacy Content automatically
- Generate Emergency Alerts from a central source

FAIRFAX COUNTY PUBLIC SCHOOLS

HOME   PARENTS   STUDENTS   COMMUNITY   EMPLOYEES   SCHOOLS & CENTERS   ACADEMICS & PROGRAMS   SCHOOL BOARD   ADMINISTRATION

Quick Links ▶

Keep in Touch

Calendars

Careers

Lunch Menus

FCPS 24-7 Learning (Blackboard)

SIS Parent Account

Forms

◀ ▶ ⏸ ⏭

National Safety Month

| HIGHLIGHTS | NEWS | SCHOOL BOARD | EVENTS | EMERGENCY |

New Today (6/16/16): Gisele Gray, who serves as the parent liaison and interpreter at Mount Vernon High School, has been named the 2016 Fairfax County Public Schools (FCPS) Hourly Employee of the Year. Read more.

Graduation

Congratulations to the Class of 2016! The complete schedule of graduation ceremonies is available.

Book Your Summer

Encourage your student to participate in this program that builds a community of readers. Book Your Summer will run from June 27 - September 7. Similar to a Bingo game, rising 1st through 12th grade students are encouraged to spend the summer reading using the READ! activity card as a guide. Find out more.

Make a Difference in the Life of a Child- Teach for FCPS

FCPS is seeking enthusiastic educators who strive to get the best out of their students AND to grow and develop collaboratively with their colleagues. More.

Summer Learning Programs

Register now for the Credit Recovery Academy, Online Campus, and SOL Remediation programs. Registration continues for Institute for the Arts (IFTA), Elementary Institute for the Arts (E-IFTA), STEM Camp, and Lake Braddock Secondary School Extended Day Adult and Community Education (ACE) enrichment classes. Learn more on the Summer Learning Programs page.

Continuing Interest

- Back to School Nights
- FCPS Cares
- Financial Transparency
- FY 2017 Budget
- Middle and High School Grading Policy
- Strategic Plan for FCPS

Second grade students at Terra Centre Elementary School enjoyed a presentation about reptiles by a parent in Teresa Lewis' class.
View In Our Schools Gallery »

red 21

▶

View the FCPS Channel on YouTube

More Videos »

Fairfax County
PUBLIC SCHOOLS
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FCPS 24-7 LEARNING (BLACKBOARD)

BUS DELAY NOTIFICATION SYSTEM

CAREERS AT FCPS

FIND YOUR SCHOOL

Syndicate District-Wide News, Blog, Events, Staff and User provisioning

FCPS Central Site

School Site

School Site

School Site

School Site

School Site

School Site

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School Site

Update downstream codebases from a central Upstream git-manged Repo

Greenbriar East Elementary School
Elite

Jeb Stuart High School
Elite

Kings Glen Elementary School
Elite

Lake Braddock Secondary School
Elite

Poe Middle School
Elite

Rachel Carson Middle School
Elite

Technical Implementation

Pantheon Upstream Platform

- Git managed Upstream process for upstream to downstream code deployment
- Sites review updates on Dev environment before accepting updates on Production sites
- 'Terminus' - Pantheon's Command Line Interface (CLI), for remote management
- 'Quicksilver' - Pantheon cloud hooks for automation

ᚷ Merge **1**

ⓘ Status **1**

▤ Database / Files

⚠ Errors

🏠 Domains

🔒 HTTPS

☁ Backups

🔧 Security

👁 New Relic **New!**

Connection Mode: ○ SFTP ● Git | ⓘ Git Connection Info | `git clone ssh://code`

Updates (16) are available!

☑ Run update.php after pulling the update

☐ Auto-resolve conflicts. This attempts to automatically resolve conflicts in favor of the upstream Git repository. If you are not patching core, this is safe to use.

[Apply Updates]

Commits

jenkins-FCPS-fcps_schools-323
Jenkins authored a day ago

Merge commit 'ec80a40ecef1fed31027cc71dd2dcb0f51a97339' into HEAD
Jenkins authored a day ago

jenkins-FCPS-fcps_schools-322
Jenkins authored a day ago

Merge commit 'c7f23874733284286b0825e7864ad1ac74c9d8f7' into HEAD

Technical Implementation

Drupal 8!

- Configuration is in Code!
- Twig Theming
- Display Modes, Views and Migration in Core!
- Modules: Twig Tweaks, Feeds, Paragraphs, Lingotek, Search API, Migrate Plus, Config Installer

Technical Implementation

pattern lab
create atomic design systems

Pattern Lab

- Atomic Design - breaking down patterns into small components
- Atom > Molecule > Organism > Templates
- Structured Library of Components (small >> large)
- Integrated into custom 'Gesso' theme
- Allows Front End Devs to work concurrently with Site Builders

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Twig tweak

View   Version control   View history   Automated testing

Posted by Chi on *January 3, 2016 at 2:55pm*

Twig Tweak module provides a Twig extension with some useful functions and filters that can improve development experience.

```
<dl class="examples">

  {# You can pass arguments to the view if needed. #}
  <dt>View:</dt>
  <dd>{{ drupal_view('view_name', 'page_1') }}</dd>

  {# To hide the block on other pages put it to 'Disabled' region. #}
  <dt>Block:</dt>
  <dd>{{ drupal_block('bartik_powered') }}</dd>

  {# It can be any content entity. #}
  <dt>Entity:</dt>
```

Maintainers for Twig tweak

Chi – 9 commits
last: 1 month ago, first: 11 months ago

View all committers

View commits

Issues for Twig tweak

To avoid duplicates, please search before submitting a new issue.

[   ]   **Search**

Advanced search

All issues

Technical Implementation

Twig/Custom Theme

- No Display Suite or Panel Pages!
- Theme Views and Forms embedded within Paragraphs
- Use of variables for custom Site colors
- Leveraged colorfield module to create color palate

```twig
{%
  set classes = [
    'node',
    'node--type-' ~ node.bundle|clean_class,
    node.isPromoted() ? 'node--promoted',
    node.isSticky() ? 'node--sticky',
    not node.isPublished() ? 'node--unpublished',
    view_mode ? 'node--display-mode-' ~ view_mode|clean_class,
  ]
%}

<article{{ attributes.addClass(classes) }}>
  <div class="node__content">
    {% if content.field_hero|render %}
      {{ content.field_hero }}
    {% else %}
      <div class="node__header">
        <div class="node__header-background fcps-color--bg-dark{{ dark_color }}"></div>
        <div class="node__header-content"><h1 class="node__title fcps-color--dark{{ dark_color }}">
      </div>
    {% endif %}
    {{ content.field_page_content }}
    {{ drupal_view("related_blog_posts") }}
  </div>
</article>
```

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Lingotek Translation

View   Version control   View history   Automated testing

Posted by **lingotek-admin** on *April 6, 2011 at 8:32pm*

Lingotek Translation is a community-maintained module that is primarily sponsored by **Lingotek** and built on Drupal's standard multilingual modules (locale, content translation, entity translation, internationalization, etc). The module helps Drupal administrators, agencies, and web marketers to:

1. Get a Drupal site multilingual-ready within minutes (instead of days)
2. Translate Drupal content using machine translation and/or human translators with access to your site
3. Lingotek offers extensive professional translation and localization services. Lingotek's Language Services team includes professional, in-country linguists, localization project managers, and localization engineers – all of whom ensure the highest quality of translations. Should you have existing translators or vendors, it is possible

Maintainers for Lingotek Translation

jbhovik – 307 commits
last: 7 hours ago, first: 1 year ago

penyaskito – 233 commits
last: 2 weeks ago, first: 1 year ago

t.murphy – 40 commits
last: 1 month ago, first: 6 months ago

cjonghyun – 31 commits
last: 4 months ago, first: 7 months ago

sethwhite – 112 commits
last: 6 months ago, first: 1 year ago

View all committers

Technical Implementation

Lingotek Translation Services (lingotek)

- Paid 4rd party platform provides machine and human translators of Site content
- Utilizes I18n module
- 'Works' with revisioning/moderation
- Did not play well at first

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Configuration installer

View   Version control   View history

Posted by **alexpott** on *December 3, 2014 at 10:20am*

The Configuration Installer is a installation profile that takes over the Drupal installer and allows sites to be created from existing configuration.

This is an installation profile and needs to be put in `/profiles` **in order to work.**

Project Information

Maintenance status: Actively maintained

Development status: Under active development

Reported installs: **181** sites currently report using this distribution. View usage statistics.

Downloads: 25,019

Last modified: November 26, 2015

Maintainers for Configuration installer

alexpott – 19 commits
last: 7 months ago, first: 2 years ago

View all committers
View commits

Issues for Configuration installer

To avoid duplicates, please search before submitting a new issue.

Technical Implementation

Configuration Installer Profile (config_installer)

- Set config directory in settings.php
- Imports configuration on Site install (drush si)
- Single config directory for install and updates
- Post install hooks allow for default content to be loaded

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```
▼ 📁 profiles
  ▼ 📁 config_installer
    ▼ 📁 src
      ▼ 📁 Form
          📄 SiteConfigureForm.php
          📄 SyncConfigureForm.php
      ▼ 📁 Storage
          📄 SourceStorage.php
      ▶ 📁 Tests
    📊 config_installer.info.yml
    📄 config_installer.install
    📄 config_installer.module
    📄 config_installer.profile
```

```
789   // compiled template files.
790   $settings['php_storage']['twig']['secret'] = $settings['
791
792   $settings['install_profile'] = 'config_installer';
793   $config_directories['sync'] = 'sites/default/config';
794
```

```
BRH:~ bheaton$ terminus sites create --site=f1_heaton_ms --name='f1-h
eaton-ms' --label='Brooke Heaton Middle School' --upstream=c28628b2-6
b8f-4962-9838-69295c3fff68 --org=a7e4d66b-ab92-481b-ab77-626b8562544e


BRH:~ bheaton$
BRH:~ bheaton$ drush @pantheon.f1-heaton-ms.dev si config_installer -
-site-mail=bheaton@forumone.com --site-name='Brooke Heaton Middle Sch
ool' --account-mail=bheaton@forumone.com --account-name=f1_heaton_ms_
admin --account-mail=bheaton@forumone.com
```

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Default Content for D8

View Version control View history Automated testing

Posted by **larowlan** on *October 1, 2015 at 8:40pm*

Overview

Default content gives your module and install profile a way to ship default content as well as configuration.
Powered by core's serialization, rest and hal modules.

Features

Supports entity–references between content.
Supports files if you have **File entity**
Easily export your content and its dependencies to yml using drush commands.

How does it work

Maintainers for Default Content for D8

andypost – 7 commits
last: 2 months ago, first: 2 years ago

larowlan – 47 commits
last: 7 months ago, first: 3 years ago

jibran – 4 commits
last: 8 months ago, first: 2 years ago

matslats – 5 commits
last: 9 months ago, first: 9 months ago

Sam152 – 4 commits
last: 1 year ago, first: 1 year ago

View all committers

Technical Implementation

Default Content (default_content)

- Uses Drupal's core HAL/json to export content (nodes, terms, menu items) to files
- Entities are created from files on module enable
- Files utilize entity UUID for entity references

```
▼ 📁 custom
  ▼ 📁 fcps_default_content
    ▼ 📁 content
      ▼ 📁 block_content
          📄 footer-promo.json
          📄 utility.json
      ▼ 📁 feeds_feed
          📄 blog.json
          📄 event.json
          📄 news.json
      ▼ 📁 file
          📄 0e7e7d6b-3277-47c5-ae2d-133fee411fc9.json
          📄 39cd8978-590e-4e4d-80bd-ae08ecf4e0fd.json
          📄 8103b77f-cead-4448-bced-e9e5aa6e8052.json
          📄 12429e79-19ce-4c7f-82e2-bfc0d9ae5ba2.json
          📄 ab159610-b2a6-4f14-9cbc-070cacdb56bb.json
          📄 ccca7c33-ee9c-44b6-9653-ca7b07b9c70f.json
      ▼ 📁 menu_link_content
          📄 footer-foia.json
          📄 footer-nondiscrimination.json
          📄 footer-policies-regulations.json
          📄 footer-web-accessibility-guidelines.json
          📄 footer-web-privacy-policy.json
```

```json
{
    "_links": {
        "self": {
            "href": "http:\/\/default\/404-page-not-found?_format=hal_json"
        },
        "type": {
            "href": "http:\/\/drupal.org\/rest\/type\/node\/landing_page"
        },
        "http:\/\/drupal.org\/rest\/relation\/node\/landing_page\/uid": [
            {
                "href": "http:\/\/default\/user\/1?_format=hal_json",
                "lang": "en"
            }
        ],
        "http:\/\/drupal.org\/rest\/relation\/node\/landing_page\/revision_uid": [
            {
                "href": "http:\/\/default\/user\/1?_format=hal_json"
            }
        ],
        "http:\/\/drupal.org\/rest\/relation\/node\/landing_page\/field_page_content": [
            {
                "href": ""
            }
        ]
    },
    "nid": [
        {
            "value": "12"
        }
    ],
```

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Migrate Plus

View   Version control   View history   Automated testing

Posted by **mikeryan** on *February 21, 2014 at 12:47pm*

The migrate_plus project contains three modules:

1. migrate_plus – Extends the core migration framework with additional functionality. Currently that includes a MigrationGroup configuration entity for grouping migrations, and a PREPARE_ROW event to make it easier to respond to and manipulate incoming source data. It also includes several source and process plugins, as well as defining plugin types for authentication, data parsing, and data fetching.
2. migrate_example – A carefully documented implementation of a custom migration scenario, designed to walk you through the basic concepts of the Drupal 8 migration framework.
3. migrate_example_advanced (still in progress) – Examples of more advanced techniques for Drupal 8 migration.

Versions:

1. 8.x–3.x – Compatible with Drupal 8.2.x and above, this is where primary development is now focused.

Maintainers for Migrate Plus

mikeryan – 98 commits
last: 1 month ago, first: 2 years ago

View all committers
View commits

Issues for Migrate Plus

To avoid duplicates, please search before submitting a new issue.

[ ] **Search**

Advanced search
All issues

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Technical Implementation

- Search Api with Solr search index

D8 Migrate, Migrate Plus, Migrate Source CSV

- Performed initial migration of some legacy content
- Import users and content from a central file that is saved nightly by client's IT team
- Run cron jobs to pull in updates and publish/block users and content

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```yaml
uuid: a53342dc-7df3-4726-98d7-a793b40faefa
langcode: en
status: true
dependencies:
  module:
    - fcps_migrate
id: fcps_migrate_users_csv
migration_tags:
  - CSV
migration_group: fcps
label: 'FCPS User Migrate - CSV'
source:
  plugin: csv
  path: 'public://fcps_users.csv'
  header_row_count: 1
  keys:
    - GUID
    - Facility
  delimiter: ','
  column_names:
    -
      FirstName: FirstName
    -
      MiddleName: MiddleName
    -
      LastName: LastName
    -
      Email: Email
    -
      AccessLevel: AccessLevel
    -
      GroupName: GroupName
    -
      UserName: UserName
    -
      GUID: GUID
    -
      Location: Location
```

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Feeds

View   Version control   View history   Automated testing

Posted by **febbraro** on *September 21, 2009 at 6:01pm*

Import or *aggregate* data as nodes, users, taxonomy terms or simple database records.

- One-off imports and periodic aggregation of content
- Import or aggregate RSS/Atom feeds
- Import or aggregate CSV files
- Import or aggregate OPML files
- **PubSubHubbub support**
- Create nodes, users, taxonomy terms or simple database records from import
- Extensible to import any other kind of content
- Granular mapping of input elements to Drupal content elements
- Exportable configurations
- Batched import for large files

Installation

For requirements and installation instructions, refer to the included README.txt file.

Maintainers for Feeds

MegaChriz – 72 commits
last: 2 weeks ago, first: 3 years ago

twistor – 799 commits
last: 1 month ago, first: 5 years ago

tristanoneil – 6 commits
last: 2 years ago, first: 6 years ago

franz – 10 commits
last: 3 years ago, first: 4 years ago

febbraro – 7 commits
last: 4 years ago, first: 5 years ago

View all committers
View commits

Technical Implementation

Feeds

- Using RSS View from the FCPS 'main' Site to syndicate content to individual school Sites
- 3 Feeds importers import the RSS format to create content
- Had to get very creative to workaround limitations of Feeds module

Technical Implementation

Search API, Solr Search, Facets

- Controlled indexing and displays of searchable content
- Faceted search

Schools and Centers Directory

Find a school, center, or administrative center by choosing an option for filtering the schools and centers. The school system is divided into five regions, each comprising two to four high school pyramids and their feeder elementary and middle schools.

Enter Search Terms

Search   **Hide Filters**

ACE Learning Center

400 Elden Street
Herndon, VA 20170
703-658-2790

Adult and Community Education (ACE)

6815 Edsall Rd
Springfield, VA 22151
703-658-1201

Aldrin Elementary School

11375 Center Harbor Rd
Reston, VA 20194
703-904-3800

Principal
Shane Wolfe

Refine & Filter

By School Type ⌃

- ☐ Elementary School (142)
- ☐ Nontraditional School Programs (32)
- ☐ High School (28)
- ☐ Administration Centers (27)
- ☐ Middle School (23)
- ☐ Special Education Schools

Technical Implementation

Global and School Specific pop-up alerts

- Used an RSS feed to publish 'alert'
- Jquery 'listener' populates global alerts and site-specific alert if school_id is a match

✕ CLOSE THIS ALERT

ⓘ Test global alert

test test

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Lessons Learned

- Upstream architecture can be delicate. Document well and plan before you set it live!
- D8 is a 'work in progress' - frequent patches and delicate combinations of modules :/
- Some modules aren't ready to use - workarounds are necessary
- Developing w/ 'config' worked better than Features
- Testing is tricky and automation may be needed
- Config Installer is tricky - order of execution is :/

Learn More...

- FCPS Central site: www.fcps.edu
- Running a Custom Upstream on Pantheon
  https://pantheon.io/docs/running-custom-upstream/
- Drupal 8 Day: Streamlined Front end Development with PatternLab and Twig
  https://www.youtube.com/watch?v=CCH1QrGy2Ko
- Config Installer: https://www.drupal.org/project/config_installer
- Default Content: https://www.drupal.org/project/defaultcontent

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Questions?