Operations Handbook: Penn State H5P Portal

Last revised 2026-10-12. Maintained in the repository (`docs/operations-handbook.md`) so it versions with the code; the copy linked from the site footer is generated from that file. Written for whoever is responsible for keeping the site running, whether that is the Center for Educational Innovation (CEI) at Penn State Behrend or Penn State IT. It assumes no prior knowledge of this project, but it does assume working familiarity with WordPress, Pantheon, and Git.

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1. Executive summary

The H5P Portal is a WordPress site that serves as the central authoring tool for interactive course content (H5P) across several Penn State campuses. About 40 instructional designers create, edit, copy, and embed interactive items into Canvas courses through it. The official H5P plugin provides the authoring; CEI's custom code adds the governance that the plugin does not: campus-based edit permissions, required metadata on every item, a shared collaborators model, a stable embed workflow for Canvas, and usage analytics.

Six things are business-critical and must keep working:

1. Content IDs and embed URLs never change. Thousands of Canvas pages point at them.
2. Legacy embed URLs from the earlier Drupal-based system (`/interactive/h5p/embed/{id}`) keep resolving. About 2,700 Canvas embeds still use that form.
3. Designers can edit only their own items, items on their campus, and items they have been added to as collaborators. This is enforced on the server, not just hidden in the interface.
4. Embeds generated by the portal resize correctly inside Canvas.
5. The Copy action produces a clean, editable duplicate owned by the person who copied it.
6. Monthly load analytics keep accumulating; they feed a public dashboard.

The code is small (about 5,000 lines of PHP across three custom plugins), has no external API dependencies, and changes rarely. The main risks are WordPress, H5P, or PHP version updates that change the admin screens the custom code hooks into, and accidental deactivation of one of the custom plugins.

The site is owned by CEI (contact: Jon Gunnell, jpg5924@psu.edu). Day-to-day technical work is shared between CEI and Jaimen Gallo (jgg12@psu.edu).

2. Environment inventory

Item	Value
Hosting	Pantheon, site `h5-p-portal`. Three environments: Dev, Test, Live. Code moves Dev to Test to Live in the Pantheon dashboard; it never moves backward.
Live	`https://live-h5-p-portal.pantheonsite.io/`, served to users as `https://behrend-elearn.psu.edu/`
Dev	`https://dev-h5-p-portal.pantheonsite.io/`
Platform	WordPress on Pantheon's WordPress upstream. Pantheon's own `pantheon-mu-plugin` and `loader.php` live in `wp-content/mu-plugins/`; they belong to Pantheon and are never edited.
Source repository	`github.com/psu-cei/H5P-Portal` (private, in the CEI GitHub organization). Holds the three custom plugins and this handbook. It is the single working copy of the custom code and the backup of record, but it is **not** connected to Pantheon: deployment is manual (section 4).
Analytics data repository	`github.com/psu-cei/H5P-Portal-Analytics-Dashboard-Data` (public). Holds `h5p-data.json`, which the analytics dashboard reads directly from GitHub.
Sign-in	Penn State single sign-on through the OpenID Connect Generic plugin (`wp-content/plugins/openid-connect-generic/`). Authentication is external; roles and campus assignment are internal to WordPress.
Third-party plugins that matter	Official H5P plugin (authoring, content storage, embed handler); OpenID Connect Generic (sign-in).
Custom plugins	`h5p-portal-suite`, `h5p-embed-endpoint`, `psu-open-graph-tags`, all under `wp-content/plugins/` (section 3).
Project files	CEI shared drive, `Projects/H5P Portal/`. The public copy of this handbook is in `H5P Portal Public Documentation/` there, and the site footer links to it.
Analytics dashboard	`https://behrend-elearn.psu.edu/analytics-dashboard/` (Dev: `https://dev-h5-p-portal.pantheonsite.io/analytics-dashboard/`), linked from the site header as "Analytics". A WordPress page on this site holding the dashboard HTML, which reads `h5p-data.json` from the public data repository on every load. The master copy of that HTML is kept in the CEI project folder's `Analytics/` subfolder.

3. How it works

Users and roles

Everyone signs in with a Penn State account. WordPress roles do the authorization:

- **Administrator** (`manage_options`): CEI staff. Can edit, copy, reassign, and delete anything, manage users and campuses, and switch suite modules on and off.
- **Author**: every designer. Can create items, edit items they own or are allowed to edit (below), copy any item, and generate embed code. Authors never see the WordPress dashboard; the suite hides the admin menus and sends them to the Portal.

Each user has an assigned campus (user profile, "H5P Campus"), stored in `wp_usermeta` under `psu_user_campus`. The list of allowed campuses is kept at Settings > H5P Metadata (`wp_options`, `h5p_admin_tweaks_campuses`; defaults are Altoona, Behrend, CCID, Great Valley, Harrisburg).

Items, metadata, and the Portal

The official H5P plugin stores every item in `wp_h5p_contents`; its `id` is the content ID that appears in every embed URL and must never change. CEI's metadata lives beside it in `wp_h5p_content_meta` (one row per item: `campus`, `course_id`), kept out of the H5P tables so plugin updates cannot disturb it. Campus is filled in from the designer's own campus and locked for non-administrators; Course ID / Location is free text.

Designers work from the Portal, a front-end page (`[h5p_portal]` shortcode, page ID in `wp_options` `psu_h5p_portal_page_id`) with one tab per campus plus "My Interactives". Each row offers Edit (when permitted), Embed, and Copy. Creating and editing happen in the normal H5P admin screens; the suite injects its metadata box, collaborator picker, and embed box into those screens.

Who may edit what

The rule, enforced on the server at the moment an edit screen loads (`h5p-permissions.php`): a user may edit an item if they are an administrator, the item's owner (shown everywhere as "Designer"), a listed collaborator on it, or on the same campus as the item. Anyone else gets a 403. Delete is reserved for the owner and administrators, even for collaborators. Buttons and links in the interface only reflect this rule; they never grant it.

Collaborators

An item has exactly one owner (the Designer, `wp_h5p_contents.user_id`) who carries attribution, campus, delete rights, and control of the collaborator list. The owner or an administrator may add any number of collaborators (`wp_h5p_content_collaborators`), who get edit rights only, regardless of campus. Collaborators see shared items on their My Interactives tab with a "Shared" tag, and the Designer column shows a "+N" badge. H5P cannot merge simultaneous edits, so open edit screens send a heartbeat and a warning appears when two people have the same item open; it is a warning, not a lock, and the last save wins. Administrators can transfer ownership from the Designer dropdown on the edit screen; campus does not change on transfer.

Copy

Copy duplicates the item row, its uploaded assets (`wp-content/uploads/h5p/content/{id}/`), and its metadata row, appends "(Copy)" to the title, makes the copying user the owner, sets campus to theirs, carries over no collaborators, and opens the copy's edit screen. Any Author or administrator may copy any item, including items on other campuses.

Embeds and Canvas

The native H5P embed button is disabled on purpose (H5P > Settings > Display Embed Button must stay at **Never**). Instead the suite adds an "Embed code" box to every item's Show screen and an Embed button on every Portal row. Both produce the same snippet: an iframe pointing at `/h5p/embed/{id}` plus the H5P resizer script. Width is measured against a fixed 959-pixel preview so portal-generated and show-screen embeds agree.

`/h5p/embed/{id}` is served by `h5p-embed-endpoint`, which redirects to the official H5P embed handler (`admin-ajax.php?action=h5p_embed&id={id}`) and hides the H5P toolbar in the result. Canvas strips `<script>` tags from embed code, so the resizer script never runs there; the `h5p-canvas-autoresize` module covers that case by having the embed page itself tell Canvas its height.

Legacy URLs

The earlier Drupal system published embeds as `/interactive/h5p/embed/{id}`, and about 2,700 Canvas pages still use that form. Two layers keep them working: `h5p-embed-endpoint` has a rewrite rule for the `/interactive/` path, and the `h5p-legacy-embed-compat` module redirects the same path with a 301 as a fallback in case rewrite rules are ever lost. Either one alone is sufficient.

Analytics

`h5p-load-analytics` counts each item's loads in `wp_h5p_load_totals`, split into portal loads (signed-in users) and external loads (Canvas and elsewhere), and records the last external hit. The Show screen shows the counts. On the first of each month at 05:00 Eastern, WP-Cron writes a CSV of all items to `wp-content/uploads/h5p-analytics-reports/`; the H5P Analytics admin page lists the files and can generate one on demand. CEI regenerates the dashboard's `h5p-data.json` from these CSVs each month and pushes it to the public data repository. Attribution is always the single owner and campus; collaborators do not affect analytics.

The suite's modules

`h5p-portal-suite` is a loader plus one file per feature in `modules/`. Settings > H5P Portal Suite lists every module with a checkbox. All are on by default and all should stay on; the panel exists so that a misbehaving module can be isolated in an emergency without touching code. Disabling a module never opens access that was closed; the permissions module fails closed when the collaborators or metadata modules are off.

Module	Role
`h5p-permissions.php`	The security core: edit gate, delete rule, request-scoped capability grant, Copy handler, admin lockdown for non-administrators, Show-screen embed box and sidebar

`h5p-metadata.php`	Campus and Course ID fields, campus settings page, user campus field, Designer reassignment, shared helpers
`h5p-collaborators.php`	Collaborator storage, picker, and edit-presence heartbeat
`h5p-portal.php`	The front-end Portal page, filters, sorting, embed modal, admin-menu hiding and redirects for non-administrators
`h5p-load-analytics.php`	Load counting, monthly CSV export, H5P Analytics admin page, Show-screen counts
`h5p-hide-features.php`	Hides the Tags, Display Options, and Shortcode controls on H5P admin screens
`h5p-login-redirect.php`	Sends logins to My Interactives, points the site logo there, hides the navigation menu from visitors who are not signed in
`h5p-canvas-autoresize.php`	Reports embed height to Canvas so iframes fit their content
`h5p-legacy-embed-compat.php`	Fallback 301 for `/interactive/h5p/embed/{id}`

Database quick reference

Table or key	**Owner**	**Contents**
`wp_h5p_contents`	H5P plugin	Every item; `id` is the content ID, `user_id` is the Designer
`wp_h5p_content_meta`	CEI	`content_id`, `campus`, `course_id`
`wp_h5p_content_collaborators`	CEI	`content_id`, `user_id` pairs
`wp_h5p_load_totals`	CEI	`content_id`, `portal_total`, `external_total`, `external_last_hit_at`
`wp_usermeta psu_user_campus`	CEI	A user's campus
`wp_options h5p_admin_tweaks_campuses`	CEI	The campus list
`wp_options psu_h5p_portal_page_id`	CEI	The Portal page
`wp_options h5p_portal_suite_modules`	CEI	Module on/off map; delete the option to restore everything on
`wp_options psu_h5p_collab_db_version`	CEI	Schema marker; the collaborators table creates itself when this is missing

The CEI tables create themselves on an administrator's first admin page load after deployment. Pantheon deploys do not run WordPress activation hooks, so nothing in the custom code relies on them.

4. Routine administration

Deploying a code change

The GitHub repository is not wired to Pantheon, so deployment is a copy. Every change follows the same path:

1. Make the change in the repository on `main` and push it. The repository is the only working copy; no one keeps a private local copy of the plugins.
2. Get the files onto Dev. For a file that already exists on the site, the quickest route is wp-admin on Dev: Plugins > Plugin File Editor, open the file under its plugin, paste the repository version in, save. For a new file (a new module or a new plugin folder), upload it over SFTP using the connection details on the Dev environment's dashboard; files live under `/code/wp-content/`. Keep each logical change to one Pantheon commit.
3. If Dev is in SFTP mode, commit the change in the Pantheon dashboard so it is recorded.
4. Test on Dev (section 5 lists what to check for the common changes).
5. Deploy Dev to Test, then Test to Live, with the Deploys buttons in the Pantheon dashboard. Test is the rehearsal; nothing goes to Live that has not been on Test.

A regular plugin that is new to the site also needs activating on each environment, because activation lives in the database and does not deploy with the code. Suite modules do not need this.

Rolling back

Pantheon keeps the full commit history. To undo a change, revert it on Dev (paste the previous file contents back in, or revert the commit from Pantheon's Git repository), commit, and promote Dev to Test to Live again. Code moves forward only. Rolling back code does not roll back the database, but the custom code makes no destructive schema changes, so this is rarely a concern.

WordPress, H5P, and PHP updates

- WordPress core and Pantheon's platform files arrive as upstream updates in the Pantheon dashboard. Apply them to Dev, check the H5P admin screens still show the metadata box, collaborator picker, and embed box, then promote.
- The H5P plugin and its content-type libraries update from the WordPress Plugins and H5P Libraries screens on Dev. The suite hooks into H5P's admin markup, so after an H5P update, open a Show screen and an Edit screen and confirm the injected boxes still appear in the sidebar.
- PHP version is set in `pantheon.yml` in Pantheon's repository. Test any change on Dev.

Users

A Penn State user who signs in for the first time gets an account through the OpenID Connect plugin. An administrator then opens the user's profile in wp-admin, sets the role to Author, and sets "H5P Campus". Until the campus is set, the user can create items but cannot edit same-campus items and new items get no campus. Removing a user: reassign their items to another Designer first (Edit screen, Designer dropdown), then delete the account.

Campuses

Settings > H5P Metadata, one per line. Spelling and case must match what is stored on existing items; comparisons are normalized for case but a renamed campus orphans the items that carry the old name.

Monthly analytics refresh

On or after the first of the month, download the newest `h5p-loads-auto-*.csv` from H5P Analytics in wp-admin into the CEI project folder's `Analytics/` subfolder, regenerate `h5p-data.json` with the generator kept there, and push the result to the public data repository. The dashboard updates on its next load. Keep every monthly CSV; the generator reads all of them.

Suite modules

Settings > H5P Portal Suite. Leave everything checked. If the site misbehaves after an update, uncheck modules one at a time to find the culprit, then fix the code and recheck them.

5. Troubleshooting

Symptom	**Likely cause**	**Where to look**
A designer gets "You do not have permission to edit"	Their campus does not match the item's, and they are neither owner nor collaborator	User profile H5P Campus; the item's Campus on its Show screen; add them as a collaborator if the access is intended
A designer cannot see the Portal, lands on a WordPress dashboard	Role is not Author, or the Portal page is missing	User role; `psu_h5p_portal_page_id` points at a published page containing `[h5p_portal]`
Metadata box, collaborator picker, or embed box missing from an H5P screen	H5P or WordPress update changed the admin markup; or the module is off	Settings > H5P Portal Suite; browser console for JavaScript errors; the selectors in the affected module
Copy returns "Forbidden" or "Bad nonce"	Stale page (nonce expired) or the Author role lost `h5p_duplicate_contents`	Reload and retry; the permissions module re-adds the capability on every request
Embed shows in Canvas but does not resize	`h5p-canvas-autoresize` off, or Canvas has stripped the iframe attributes	Suite settings; test the embed URL directly in a browser
A legacy `/interactive/` URL returns 404	Both the endpoint rewrite rule and the compat module are off, or rewrite rules were lost	Confirm `h5p-embed-endpoint` is active and the compat module is on; re-save Permalinks to flush rules
New items have no campus	The designer's profile has no campus set	User profile
Campus tab shows nothing	Campus spelling in the list differs from what items carry	Settings > H5P Metadata versus `wp_h5p_content_meta.campus`
White screen in wp-admin	PHP fatal error, usually after an update	Pantheon dashboard logs; disable the suite's modules via

		`wp_options` `h5p_portal_suite_modules` if wp-admin is unreachable
Users cannot sign in at all	SSO plugin or Penn State identity provider	Confirm OpenID Connect Generic is active and its redirect URI matches the environment; if sign-in works but permissions are wrong, the problem is role or campus, not SSO
External load counts look inflated	A trailing-slash embed URL (`/h5p/embed/{id}/`) is counted twice	Embed code generated by the portal has no trailing slash; check the source of the embeds in question

Pantheon caching rarely affects this site because almost everything happens in wp-admin for signed-in users, but clear the environment cache in the Pantheon dashboard before concluding that a change did not take.

History worth knowing

- The site replaced a Drupal-based H5P system in early 2026; the legacy URL handling exists for that migration.
- In July 2026 the site was compromised through a WordPress core vulnerability. It was restored from a July 10 backup, items created after that date were recreated by hand, analytics were corrected, and WordPress was patched. Keep core current.
- Until October 2026 some custom code ran as must-use plugins and some lived only on the server. Everything now lives in the repository and in regular plugins.

6. Data and policy notes

The site holds instructional content created by Penn State staff, the names and Penn State email addresses of about 40 users, and load counts per item. It holds no student records and no financial data; nothing of that kind should be added. Content and metadata are CEI records; Pantheon's daily automated backups are the standing protection. Administrator actions (ownership transfer, deletion) are not separately logged beyond WordPress's own records.

The site targets accessibility through H5P's own content types; the Portal interface uses standard WordPress components. Embeds carry the item title as the iframe `title`.

7. Handing the site over

A new operator needs, in order: a Pantheon account with access to site `h5-p-portal` (granted by an existing site owner or Behrend IT); an Administrator account on the WordPress site (sign in once with a Penn State account, then have an existing administrator change the role); membership in the `psu-cei` GitHub organization with write access to `H5P-Portal` and `H5P-Portal-Analytics-Dashboard-Data`; and access to the CEI shared drive's `Projects/H5P Portal/` folder. Sign-in depends on a Microsoft Entra app registration that CEI owns but Penn State IT hosts; the details are in the table below. The client secret expires on a schedule. When it does, no one can sign in until a registration owner issues a new secret in the Entra Admin Center and enters it in

WordPress at Settings > OpenID Connect Client. Put the expiry date on a calendar with at least a month's warning.

Item	Value
App registration	`E8-OpenID-Wordpress-Pantheon`
Entra tenant	The Pennsylvania State University (primary domain `m365.psu.edu`), tenant ID `7cf48d45-3ddb-4389-a9c1-c115526eb52e`
Application (client) ID	`16953fc5-fd11-4ce8-bc73-6a4377c05224`
Registration owners	jgg12, sma7, nds5186
Redirect URIs	`https://behrend-elearn.psu.edu/wp-admin/admin-ajax.php?action=openid-connect-authorize`, plus the same path on `dev-h5-p-portal.pantheonsite.io`, `test-h5-p-portal.pantheonsite.io`, and `live-h5-p-portal.pantheonsite.io`
Client secret	Named `h5p-2027`, expires **February 16, 2028**. Managed in the Entra Admin Center under App registrations > E8-OpenID-Wordpress-Pantheon > Certificates & secrets; the value is entered in WordPress at Settings > OpenID Connect Client.
Adding an owner	An existing owner, or a Penn State IT administrator, adds one under App registrations > E8-OpenID-Wordpress-Pantheon > Owners.

Any new hostname (a new Pantheon multidev, a changed vanity domain) needs its redirect URI added to the registration before sign-in will work there.

No local development environment is maintained. The deployment path in section 4 is the whole workflow.

To retire the site: export the database and `wp-content/uploads/h5p/` (every item's libraries and media) from Pantheon's backups and keep them under the records retention schedule; make a final analytics export; then delete the Pantheon site and archive the repositories. Note that the roughly 2,700 legacy embeds and every portal-generated embed in Canvas will break the moment the hostname stops answering.

8. Reference

File	Purpose
`plugins/h5p-portal-suite/h5p-portal-suite.php`	Loader and the module on/off panel
`plugins/h5p-portal-suite/modules/*.php`	One file per feature (section 3)
`plugins/h5p-embed-endpoint/h5p-embed-endpoint.php`	`/h5p/embed/{id}` and `/interactive/h5p/embed/{id}` routing; toolbar hiding on embeds
`plugins/psu-open-graph-tags/psu-open-graph-tags.php`	Front-page link-preview tags (Teams, social); must be activated per environment

`docs/operations-handbook.md`	This handbook; regenerate the public copy after editing
`H5P-Portal-Analytics-Dashboard-Data/h5p-data.json`	Dashboard data, rebuilt monthly