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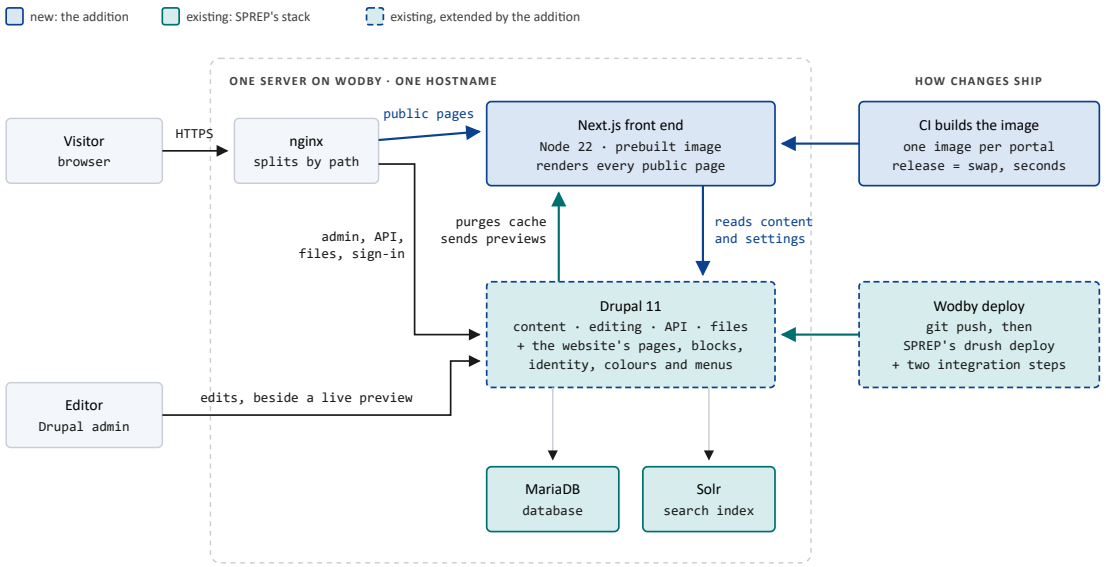
# PACIFIC ENVIRONMENT PORTAL – NEXT.JS FRONT END ARCHITECTURE REPORT

**Version 1.2, prepared by: Ofir d.o.o., 22nd of October 2026, Osijek, Croatia, EU.**

**Status: delivered on SPREP's new-nextjs-frontend branch; running on SPREP's dev instance, not yet on production**

## 1. The setup in one picture




**What is new is blue; what was already there is teal; what was there and gained something has a blue edge.**

*One Next.js container joins SPREP's Drupal stack behind the same hostname. Drupal stays the only place content lives, and now holds the website's own pages, blocks and settings too; the front end reads it all and renders the public pages. Drupal deploys the way SPREP's always has, with two integration steps; the front end ships as a prebuilt image.*

- **One new container.** Next.js on Node 22, released as a prebuilt image, one per portal; mounts nothing, stores nothing.
- **One hostname.** nginx sends the public pages to Next.js and everything else to Drupal, through one included routing file. Once a portal has switched, Drupal also sends visitors to its own dataset, dashboard and website-page addresses on to the front end.



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- **Drupal is the only source, and holds more than before.** Four content types, the dashboard blocks, and the portal's identity, colours, logos and menus are edited in Drupal; the front end reads them over the API and two small settings feeds. Nothing is stored twice.
- **Releases.** Drupal deploys with SPREP's own `drush deploy`, followed by two integration steps. The front end is built by CI into an image; a release swaps the image tag, and the new container replaces the old one once its health check passes.
- **Editors see their work as they make it.** The forms of datasets, dashboards, the website's pages, topics and countries have the real page beside them, updating as they type; tables and indicator pages are filled in on the page itself; the website's own pages have Publish and Unpublish.

## 2. Purpose, scope and provenance

### Purpose of this document

SPREP's Pacific Environment Portal runs on a Drupal 11 stack hosted on Wodby, in production. Ofir d.o.o. added a decoupled front end to it: a Node service running a Next.js application that renders the public pages, while Drupal remains the single place where content is stored, edited and published. This document describes what was added, where it touches the existing stack, how requests and data flow between the two applications, and how releases and editorial work function with the addition in place. Version 1.1 (28 August 2026, revised 7 September) described the front end alone; this edition also covers what the editorial work since then put into Drupal, and the handover.

### Scope of the delivery

The delivery has six parts: a Node service in the Wodby stack; the Next.js application, implementing the approved Figma design (see the SPREP Portal Design Decision Report); one routing file included by the existing web server; eleven Drupal modules, nine standard ones and two of Ofir's own, one of which carries the website's content types, blocks, settings and editing endpoints; an automated pipeline that builds the front end into a container image per portal; and `drush` commands that set the integration up, check it and, on request, add three ready-made dashboards. The content SPREP already had (datasets, resources, news, data stories, groups, users) is read as it is. Datasets, topics and countries gained a field or two, the dashboards' existing block field accepts the new blocks, and the search index gained a published flag; section 9 lists these changes. An editors' guide, *EKAN Admin Panel: what editors can create and edit*, accompanies this document.



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> WHAT CHANGED SINCE VERSION 1.1 (28 AUGUST 2026, REVISED 7 SEPTEMBER)
>
> - **Handover.** The work was merged with SPREP's `master` and delivered on the `new-nextjs-frontend` branch of SPREP's repository on 28 September, updated since (last on 14 October). It runs on SPREP's dev instance.
> - **Deploys** use SPREP's own `drush deploy`, and the integration is dormant until a portal is linked and switched (section 4).
> - **Drupal gained the website's own content:** a home page, a dashboards page, indicator pages and free-form website pages; dashboards built from blocks (tables, charts, card and section lists); a Highlights carousel; per-portal identity, colours, logos and menus; a Publish / Unpublish workflow.
> - **Editing:** a live preview beside the forms of what the front end draws, Edit data on the page itself, dataset forms in the administration look.
> - **Routing:** more public paths on the front end; after the switch Drupal redirects its own pages to it; the sign-in and account pages stay Drupal's.
> - **Versions:** Drupal 11.3.17, Next.js 16.3.

### Verification and provenance

Every mechanism described here was verified on a running instance: Ofir's staging instance on Wodby for the stack and the release path (container images, volumes and versions read from the cluster in August 2026), and a local copy of SPREP's production database for the content, the deploy and the editing (September and October 2026, including a rehearsal of the first deploy against a fresh install of SPREP's branch). The addition runs on SPREP's dev instance and has not been applied to SPREP's production; content counts are those of the production copy on 22 October 2026. The infrastructure described in sections 3 and 6 is that of Ofir's staging instance; SPREP's own instances may differ in detail. `drush sprep-next:verify` re-checks the testable statements on any instance.

## 3. One new container in a running stack

The existing stack (web server, Drupal, database, search, cache, mail, cron) is a set of containers on one server, managed by Wodby. The work described here adds **one container** to that set: a Node service that runs the Next.js front end. Nothing else in the stack is replaced.

Where the addition connects is deliberate: nowhere. It ships as a self-contained image and mounts no volume, not the repository and not the uploaded files. It reads content over Drupal's API and keeps no state, so it can be stopped, rebuilt or replaced without touching anything the stack holds.



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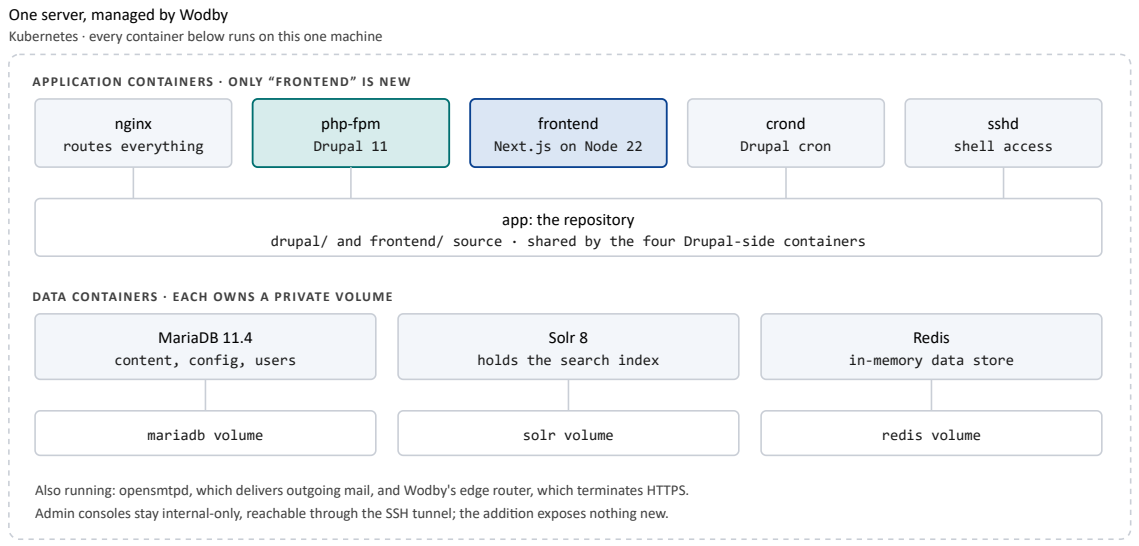


**Only the frontend container is new, and it stands alone.** *Everything else was already running in production. The addition mounts no volume: it is released as a finished image, and every volume the stack holds is untouched by it.*

### The addition

| SERVICE | IMAGE | ROLE |
|---|---|---|
| `frontend` | `project registry · Node 22` | Serves the Next.js application on port 3000 from a prebuilt image; mounts no volume and holds no data of its own. The image is built per portal; when a portal name is set in CI, its tag carries it, so two portals never share a build. |

The other services (nginx, Drupal's PHP, MariaDB, Solr, Redis, the mail relay, cron and shell access) are SPREP's existing stack, running as before. This document returns to them only where the addition touches one.

## 4. One hostname, two applications

Visitors, editors and the API all use the same address. nginx decides, per request, which of the two applications answers: the Next.js server takes the public pages, Drupal takes everything else.

This is the **only change made to the existing web server**, and it is one included routing file; the web server's own configuration is not edited. What changes on Drupal's side is behaviour, and only once the portal has switched (below): its own pages for published datasets, dashboards and website pages



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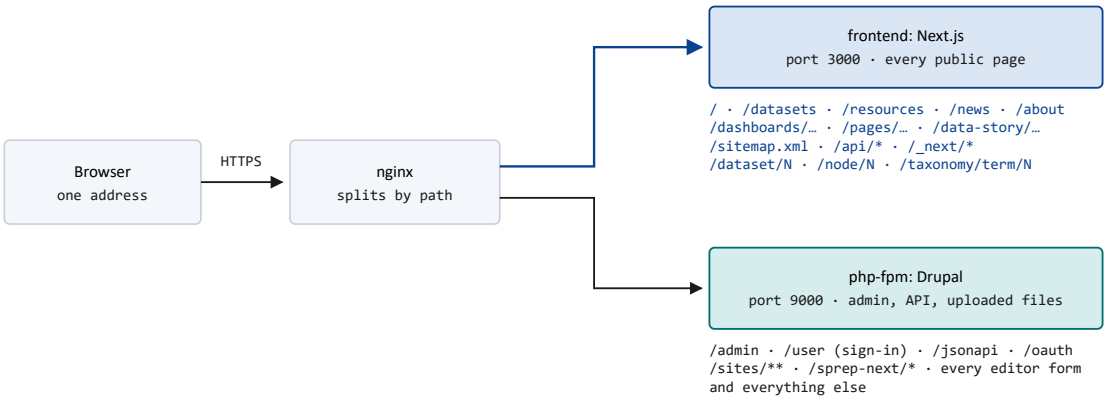
send the visitor on to the front end's addresses, and the dataset forms are drawn in the administration theme. (Drawing the sign-in pages in the administration theme too, with the portal's own logo, name and colours, and landing an editor on the content list after signing in, is ready and follows in the next update of the branch.) One restriction applies from the first deploy: the content API no longer serves a page's blocks on their own, only through the page they belong to, so that draft and removed blocks stay private.




**The split happens in nginx, by path.** *The front end owns the listings and their records, the website's pages, the numeric addresses Drupal links to (it sends them on to the readable ones), the sitemap and its own `/api`; Drupal keeps the admin, the sign-in and account pages, the content API, uploaded files and every editor form. One origin for both is what lets the preview embed the front end inside Drupal's admin.*

### Three states of a portal

The integration is deployed to every portal built from the repository, dormant: the modules, content types and settings are there, and nothing of it reaches a visitor beyond the API restriction above. It wakes in two steps that are each undone on their own (section 8): the portal is **linked** to a front end, which turns on previews and cache purges and lets the next deploy's `prepare` mint the credentials, and then **switched**, which sends visitors to the front end and gives Drupal its administration face.



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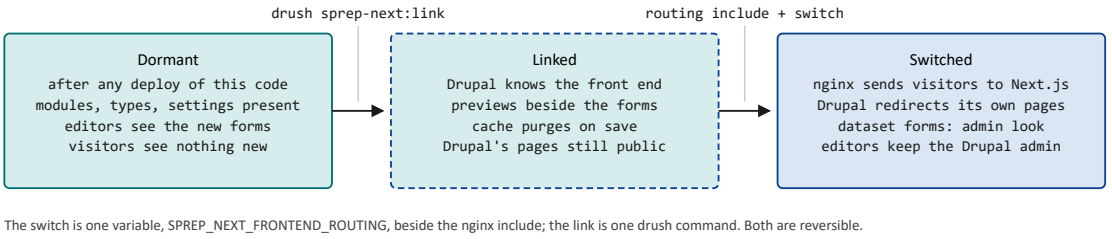


**Nothing reaches visitors until the last step.** *A portal deployed from the repository but never linked serves exactly what it served before, and a linked portal that has not switched still serves Drupal's pages to the public while its editors already preview in the front end.*

## 5. Where a page's content comes from

Pages are rendered on the server. When someone opens the dataset listing, the Next.js server, not the browser, asks Drupal for the data, waits, and sends back finished HTML. A visitor's browser never calls Drupal's API; the few requests it makes after the page arrives (search suggestions, the publisher list, image and file previews) go to the front end's own routes, and what it fetches from Drupal itself are file downloads, the portal's logos and its favicon.

The front end is a **read-only consumer** of three kinds of interface on Drupal: the content API, for datasets, resources, news, data stories, dashboards and the website's own pages; the search index, for everything counted; and small settings feeds, `site.json` and `theme.json` for the portal's identity, menus and colours, the cookie-consent configuration, and Drupal's own translation of a path to its page for links found inside editor-written text. It writes nothing: the edits made on the page in Edit data (section 7) go through Drupal's own form.



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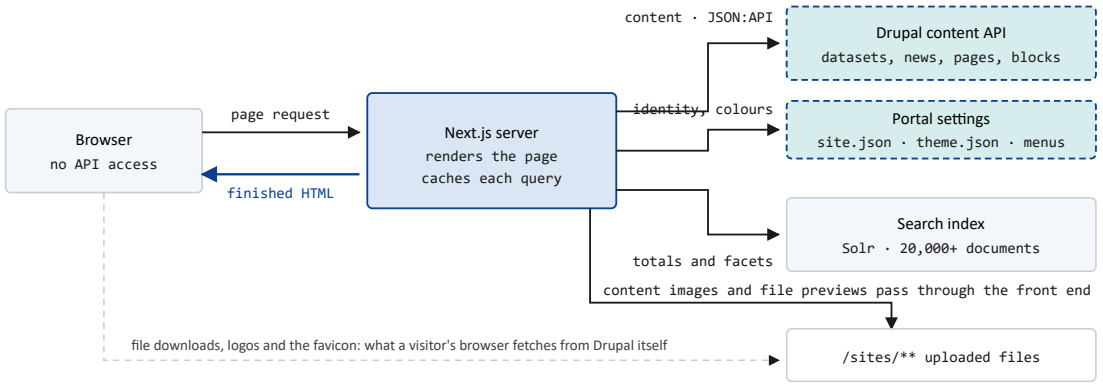


**Three sources, one renderer.** *Content comes from Drupal's API, counts from the search index, and the portal's name, logos, menus and colours from two settings feeds. Content images Drupal hosts pass through the front end, which resizes them; file previews are streamed through it too; file downloads, the logos and the favicon are the Drupal URLs a visitor's browser fetches directly.*

> **WHY THE SEARCH INDEX MATTERS**
>
> Drupal's API can list records but cannot count them. Every figure that counts datasets (the datasets total, each sidebar facet, the per-country map numbers) comes from the search index. If the index stops, the search listing and those counts go blank, while pages that address content directly, and the two small tiles counted through the API, keep working. That is exactly the split observed when it happened.

## 6. How releases work

Deploys work as SPREP already knows them. Pushing a release (a tag, in SPREP's convention) makes Wodby fetch the new code onto the shared `app` volume and run the pipeline in `wodby.yml`: SPREP's own `drush deploy` (database updates, configuration import, the deploy hooks, cache rebuild), then two steps the integration adds, `drush sprep-next:prepare` and `drush search-api:index`. The first deploy of this code installs the modules and content types through the configuration import and reindexes the search index for its new published flag, about five minutes for 20,000 items. SPREP's own pending deploy hooks, which re-save every resource without a format, took about 25 minutes on a copy of production. A deploy that stops half-way completes when run again.

The front end is **not** rebuilt by a deploy. Every change to it is compiled in advance, by CI, into a finished container image with the portal's public address built in; a build that fails never produces an



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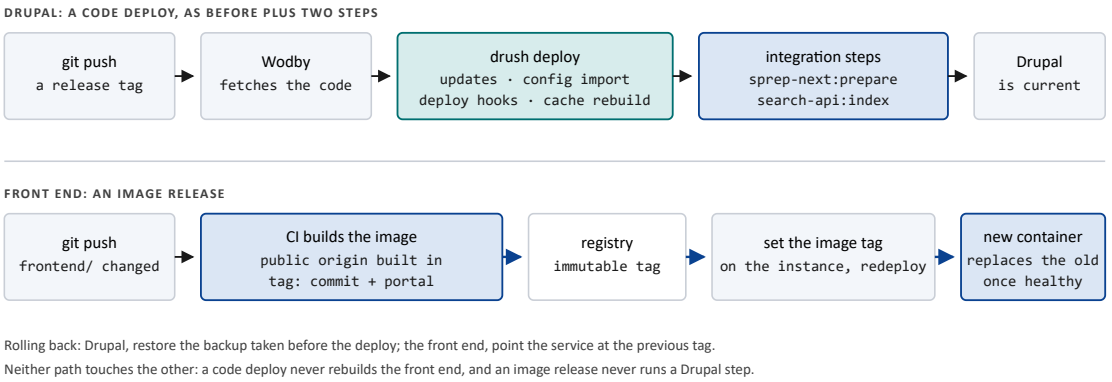
image to ship, and when a portal name is set the tag carries it, so two portals never share one.

A release of the front end is therefore an **image swap**: the service is pointed at the new tag, the new container starts in seconds, and it replaces the old one only once its health check (the `/robots.txt` route, which touches nothing) passes. Measured on the first release done this way, on the staging instance: the public pages never went down. Rolling back the front end is pointing at the previous tag. Rolling back a Drupal deploy of this code means restoring the backup taken before it: deploying the previous tag over the database would try to uninstall modules whose tables are in use. The earlier compile-at-boot mode of the front end, which left a container serving its old build until a manual restart, remains only as a documented fallback.




**Two release paths that never meet.** *Drupal's is SPREP's own pipeline with two commands appended; the front end's is a finished image swapped in behind a health check. A failed build produces no image, and a failed deploy step is completed by running the pipeline again.*

## 7. The same Drupal, with more in it

Editing stays in Drupal, on Drupal's forms, with Drupal's users and roles. What the editors can edit grew: beside the datasets, resources, news and data stories they already had, they now edit the website's home page, its dashboards page, the dashboards themselves (built from blocks: text, pictures, charts, data and indicator tables, card and section lists, resource lists), indicator pages, free-form website pages, the Highlights carousel, and the portal's name, logos, colours and menus. The editors' guide covers each form; this section covers how the forms and the front end work together.

### Editing beside a live preview

The forms of datasets, dashboards, the website's own pages, topics and countries have the real page beside them, rendered by the front end in draft mode (news, data stories and resources keep their plain forms). Titles, intros and the text inside blocks change in the preview as the editor types; picked



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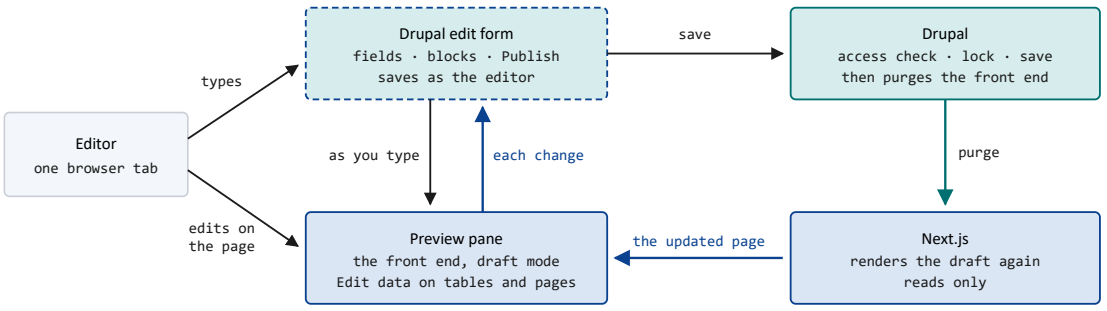
items appear as they are picked; pictures and new blocks show after Save. The form and the preview talk through the browser's messaging between frames, which is one reason both must sit on one hostname.

On dashboards with a table and on indicator pages, an **Edit data** switch in the preview lets the editor change rows, cells, charts and findings on the page itself. Each change is handed from the preview to the Drupal form and saved by Drupal as that editor, with Drupal's own access checks and a site-wide lock against concurrent edits; the front end never writes to Drupal and the content API stays read-only. On published content the change is live at once.




**One tab, two views of the same draft.** *The form on the left is Drupal's; the page on the right is the front end's. What the editor types shows at once; what the editor changes on the page is saved by Drupal and shown again by the front end.*

### Publishing

The home page, dashboards page, indicator pages and website pages are moderated: Published or Unpublished, nothing in between, and as delivered only administrators edit them (the permissions live in configuration, so a change to them is a change to the repository). Datasets, resources, news, data stories and SPREP's dashboards keep the publishing they had.

### Published edits appear without waiting

The Next.js server caches each query it makes, so it is not asking Drupal the same question on every visit. When an editor saves a dataset, a dashboard, one of the website's pages, a topic or a country, Drupal tells the front end exactly which cached answers are now wrong, by name. The integration adds its own purges for what the standard mechanism does not cover: the portal's identity, colours, logos and menus; resources; and content taken down, which is dropped from the cache at once rather than served once more. News, data stories, events and SPREP's other content types are not



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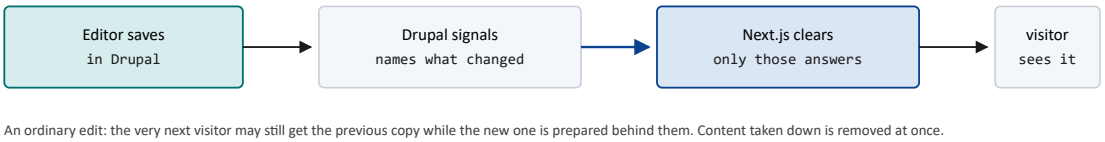
named; their pages refresh when the cache lifetime of their query runs out, five minutes for a listing, an hour for a count.

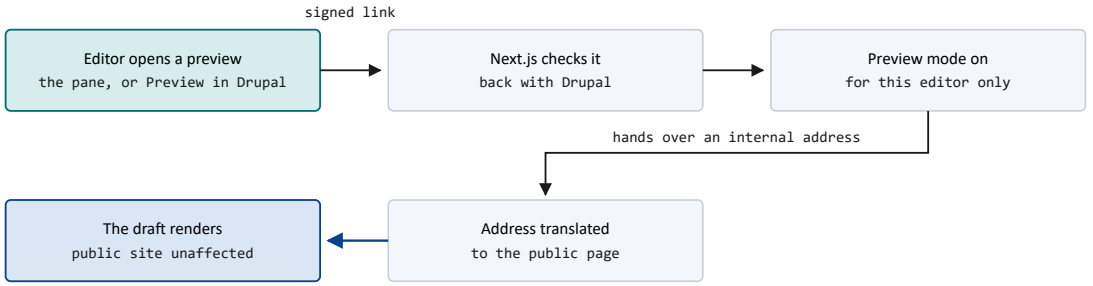



An ordinary edit: the very next visitor may still get the previous copy while the new one is prepared behind them. Content taken down is removed at once.

**Drupal names what changed rather than clearing everything.** *An edited dataset refreshes the listing and the counts that depend on it, without discarding the rest of the site's cache.*

### Previewing unpublished work

The preview pane, and the **Preview** link on Drupal's own page for a draft, open the real front end rendering that draft, while the public site continues to show the published version.




The translation step exists because Drupal's internal address for a page is not the address the public site uses.

**Preview is a signed, per-editor session.** *The link is verified with Drupal before anything is shown, the draft is visible only to whoever opened it, and the published site is never affected. Preview mode applies to the whole browser: while it is on, an editor sees drafts on the other website tabs they have open, too.*

## 8. Running the addition in production

The duties the front end brings with it are few, because of what it deliberately is not: it stores nothing. What it added to Drupal is ordinary Drupal content and configuration, operated as before.



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- **Nothing new to back up for the front end.** It is an immutable image with no state. Drupal holds more than before, the website's pages, blocks and settings, and SPREP's existing database and file backups cover them. Take a backup before the first deploy of this code, which adds modules and tables, and before ever uninstalling the integration module.
- **Releases are an image swap** for the front end, and SPREP's own pipeline for Drupal (section 6). Rolling back the front end is the previous tag; rolling back a Drupal deploy of this code is the backup.
- **Its configuration is a handful of variables, plus one build per environment.** The table below lists them. The four credentials the front end needs are minted by `drush sprep-next:prepare` once the portal is linked, printed by `drush sprep-next:env`, and entered as protected variables on the frontend service; each environment mints its own. The public origin is compiled into the image, so each portal needs its own build with its own origin.
- **A second portal is configuration, not code.** The same repository, its own instance and database, its own image (the `PORTAL` name), and its own name, logos, colours, menus and pages entered in Drupal.
- **The addition is reversible, in steps.** Unset the switch and rebuild the caches, and Drupal's own pages are public again; delete the link, and previews and purges stop; disable the service and remove the routing include, and the stack serves exactly what it served before. The website's content stays in Drupal through all three. Uninstalling the integration module deletes it: the website's pages, the blocks on dashboards, the menus and the fields the module added. Back up first.
- **`drush sprep-next:verify`** checks every part of the integration on any instance and exits non-zero when something is wrong.

| WHERE | VARIABLE | WHAT IT DOES |
|---|---|---|
| Drupal (php service) | `SPREP_NEXT_FRONTEND_ROUTING` | The switch (section 4). Off by default. |
| Drupal (php service) | `DRUSH_OPTIONS_URI` | The site's address, so that `drush uli` prints working links; Wodby's containers carry no variable with it. |
| Drupal (php service) | `NEXT_FRONTEND_ORIGIN` | Optional: links the portal at deploy time instead of `drush sprep-next:link`. |
| nginx | `NGINX_SERVER_EXTRA_CONF_FILEPATH` | The one routing include. Set it only after the frontend service exists, or nginx refuses to start. |
| frontend service | `DRUPAL_ORIGIN` · `DRUPAL_FILES_ORIGIN` · `SITE_URL` | Where Drupal and the files are, and the portal's own public address. |



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| WHERE | VARIABLE | WHAT IT DOES |
|---|---|---|
| frontend service | `the four credentials` | Preview and cache-purge secrets, from `drush sprep-next:env`; protected variables. |
| CI | `DRUPAL_PUBLIC_ORIGIN` · `FRONTEND_PUBLIC_ORIGIN` · `PORTAL` | Build the image for one portal; the origins are compiled in, the portal name goes into the tag. The job runs only when both origins are set. |

## 9. What is installed, and what was added to Drupal

The first three rows are the front end; the Drupal modules are what the integration enabled; everything below was already running in SPREP's production.

| COMPONENT | VERSION | NOTES |
|---|---|---|
| Next.js | `16.3` | The front end: React 19.2, server-rendered |
| Node.js | `22` | Runs it |
| next-drupal | `2.0.1` | The library connecting the front end to Drupal, pinned exactly |
| Drupal modules, standard | `next 2.1` · `simple_oauth 6.1` · `consumers 1.24` · `decoupled_router 2.0` · `subrequests 3.0` · `jsonapi_search_api_facets` · `config_ignore 3.4` · `workflows` · `content_moderation` | Preview and cache purging (next), the front end's credentials (simple_oauth, consumers), path translation, the country facet, per-environment config, the Publish / Unpublish workflow |
| Drupal modules, Ofir's | `sprep_next_integration` · `next_preview_form` | The website's content types, blocks, settings, workflow, edit endpoints and `drush sprep-next:*`; the preview pane beside the edit forms |
| Drupal core | `11.3.17` | The Wodby stack is labelled “drupal9”; that is the template name, not the version |
| PHP | `8.3` | |
| Search API · Search API Solr | `1.38` · `4.3.10` | Index of roughly 20,000 documents, now with a published flag |



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| COMPONENT | VERSION | NOTES |
|---|---|---|
| Solr | `8.11.2` | Search core configured from Drupal's own generated schema; version as read from the staging cluster in August 2026 |
| MariaDB | `11.4` | |
| Redis | 6 | As read from the staging cluster in August 2026 |

### What was added to Drupal

| KIND | ADDED | NOTES |
|---|---|---|
| Content types | Home page, Dashboards page, Indicator page, Website page | One home page and one dashboards page per portal, created by `prepare`; website pages at `/pages/…`, indicator pages at `/dashboards/…/…` |
| Block types | 15: data table (with its groups, columns and rows), indicator table (with its rows), chart, key findings, card list and card, section list and section, picture, feature block, listed item | Drawn by the front end; Drupal's own theme shows nothing for them |
| Adjusted on SPREP's types | Curated resource list: Popular Resources no longer required; the edit forms of datasets, dashboards, topics and countries regrouped into sections | Nothing of SPREP's was removed or renamed |
| Fields on SPREP's types | Data dashboard: six new block types allowed on its existing Dashboard elements field; dataset: Promoted to front page; curated resource list: Listed items; topics: dashboard caption and colour; countries: short name and portal address | Additive; nothing of SPREP's was removed or renamed |



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| KIND | ADDED | NOTES |
|---|---|---|
| Workflow | Editorial: Published / Unpublished | On the four new types only; SPREP's dashboards are not moderated |
| Menus | Website: main navigation · Website: footer | The front end's header and footer links; SPREP's own menus are untouched |
| Settings | Site identity · site colours and logos · eight front-end configurations | Three forms under Configuration › User interface; the eight configurations, one per previewed type, drive preview and cache purging for datasets, dashboards, the four page types, topics and countries |
| Search index | A published flag | The four page types are kept out of the index |
| Accounts | Service account `next_preview` and its OAuth consumer | How the front end reads drafts; no password, OAuth only |
| Addresses | `/sprep-next/site.json`, `/sprep-next/theme.json`, the edit endpoints, `/oauth/*`, `/router/translate-path`; `/dashboards/<title>` aliases | Each dashboard keeps its old address beside the new one. The content API's own block routes answer 403. |
| On request | Three ready-made dashboards: Multilateral Environmental Agreements, State of the Environment & Conservation, Marine Litter in the Pacific | One `drush` command each, created unpublished for an editor to review |

## Content in the portal (a copy of production, 22 October 2026)

| TYPE | COUNT | WHERE IT APPEARS |
|---|---|---|
| Datasets | 5,641 | The listing, the home page tile, the map totals |
| Resources | 15,028 | Files and links attached to datasets; the resources listing |
| News articles | 37 | Featured on the home page, listed at /news |



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| TYPE | COUNT | WHERE IT APPEARS |
|---|---|---|
| Data stories | 14 | Listed and rendered by the front end |
| Data dashboards | 4 · 3 published | SPREP's own; three ready-made ones can be added on request |
| Countries on the map | 22 | The Pacific map's pins, a fixed list in the front end (the country vocabulary holds 14 terms) |
| Search index | about 20,700 | Documents in Solr: datasets, resources and SPREP's node types |

## 10. What the React front end delivers

The portal keeps its Drupal; its public pages are served by a separate application built on React and Next.js, and the website itself is edited in Drupal. What that gives SPREP, as verified on staging and on a copy of production:

- **Pages are sent as finished HTML.** Every public page is rendered on the server, so its content is in the response itself, with nothing fetched by the browser first, and a page's shell is sent before its slowest query completes. Search engines see the complete page; sitemap, canonical addresses and structured data are generated by the application.
- **Images are resized before they are served.** Content images hosted on Drupal's files origin pass through the front end's image optimiser, which serves them at the sizes the page declares; images from other origins, the portal's logos and favicon, and file downloads are served unchanged.
- **Repeated requests are answered from cache.** Every query to Drupal or the search index is cached for a set lifetime, one minute to an hour by query (a day for the translation of a link's address), and for datasets, dashboards, the website's pages, topics, countries and the portal's settings it is purged the moment Drupal reports a change; pages are rendered per request from that cache.
- **No credentials reach the browser.** Every variable the front end reads is server-side; none is exposed to the client. Its requests to Drupal are reads only, and it holds no data of its own.
- **Editing stays in Drupal, with more to edit and a live preview.** Editors use Drupal's forms, users and roles; the website's own pages, dashboards, highlights, identity, colours and menus are theirs to change, with the real page beside the forms of what the front end draws, Edit data on the page itself, and a draft previewable before it is published.
- **The interface is React components.** The Pacific map, the faceted dataset search, the type-ahead suggestions, the dashboards' tables and charts are components in one codebase, built to the approved Figma design rather than themed around module output.



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- **A release is a container swap.** The front end is compiled in advance into a self-contained image; a release starts the new container and retires the old one once its health check passes (on the first such release on staging, the public pages stayed up), and a rollback is the same swap towards the previous image.
- **It holds no state.** There is nothing new to back up. Its configuration is a handful of variables plus one build per environment; the image pipeline and registry are the new operational pieces.
- **A second portal is configuration, not code.** One repository serves every portal; a portal's image, name, logos, colours, menus and pages are its own.
- **The stack is standard.** React 19, Next.js 16 and next-drupal pinned at 2.0.1, with no forks or private tooling, following Next's own conventions; on the Drupal side, standard modules plus two of Ofir's that follow Drupal's coding standard, as SPREP's own pipeline checks.

What the portal already ran on is as it was: its datasets, resources, news, groups, users, database and search index. The sections above describe what Drupal gained, and section 9 lists it.

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22.10.2026.

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