Push it real good

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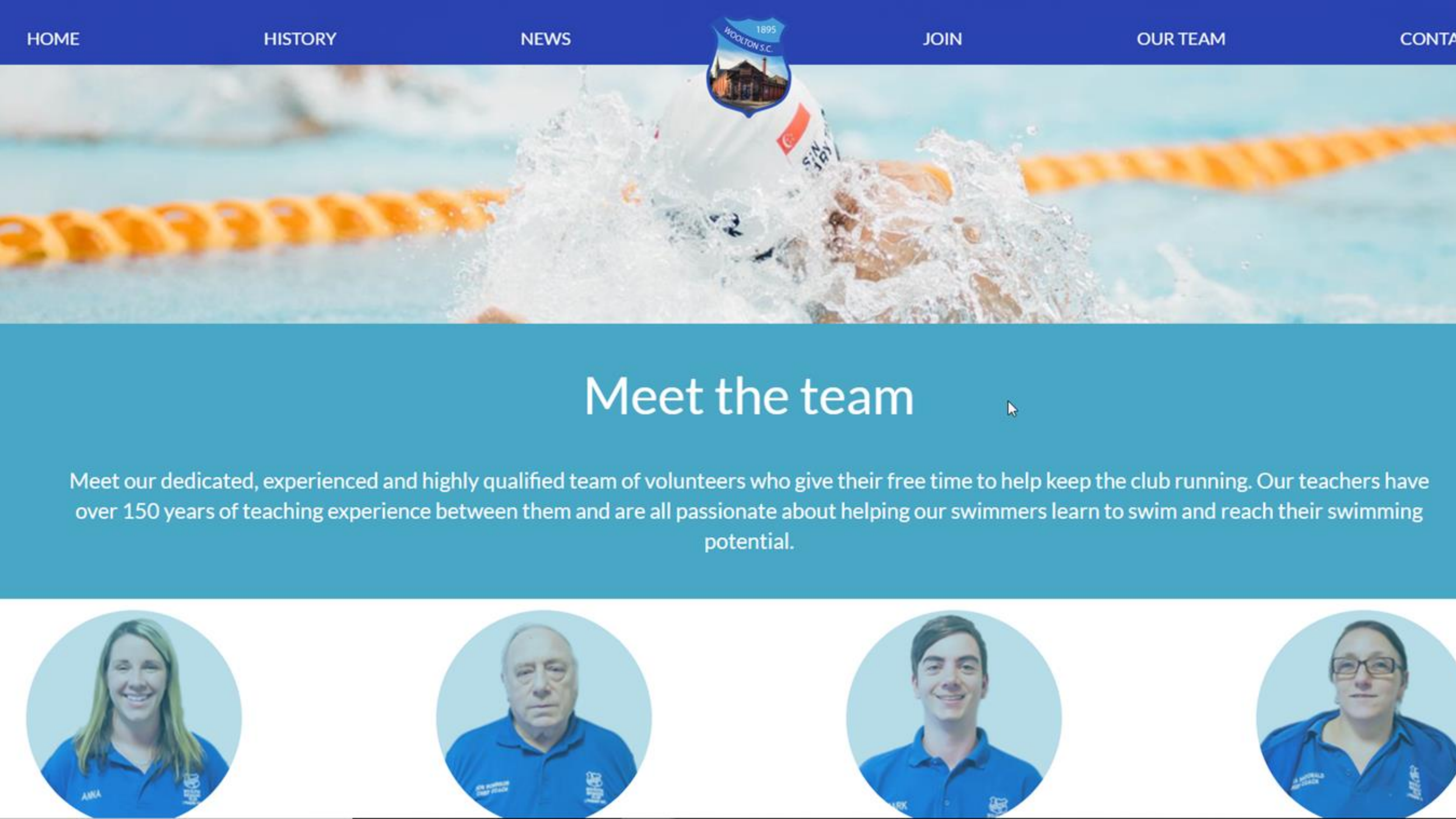
Just keep swimming

- Teaching swimming since 2007, chief coach since January

- Built the new site in September 2017 as a side project to learn more about Umbraco and to update the ancient one from early 00’s

- Update requirements: Issues with communicating about session alterations and people turning up to find that sessions were not on!

- Solution: Use the website! Extend Umbraco with a custom section that automates the sending of announcements.



Meet the team

Meet our dedicated, experienced and highly qualified team of volunteers who give their free time to help keep the club running. Our teachers have over 150 years of teaching experience between them and are all passionate about helping our swimmers learn to swim and reach their swimming potential.

Why Push Notifications?

- Modernise the way we communicate as a club
- Offer more channels to receive important announcements
    - Main channels are Email and Facebook. Push was a nice-to-have!
- Reduce the likelihood of future announcements being missed

- Give me a chance to experiment and learn new stuff

Push Notifications

- Bad reputation due to abuse/overuse by social media platforms and news sites
    - I don’t need notifying that I haven’t said “hello” in a while
- Push notifications should be used for important updates
    - … Like a last minute, unforeseen cancellation to a swimming session
- Browser support is growing:
    - Chrome latest
    - Firefox latest
    - Edge
    - Safari
    - Android: Chrome, Samsung Internet - via the Push API only*

Key Concepts

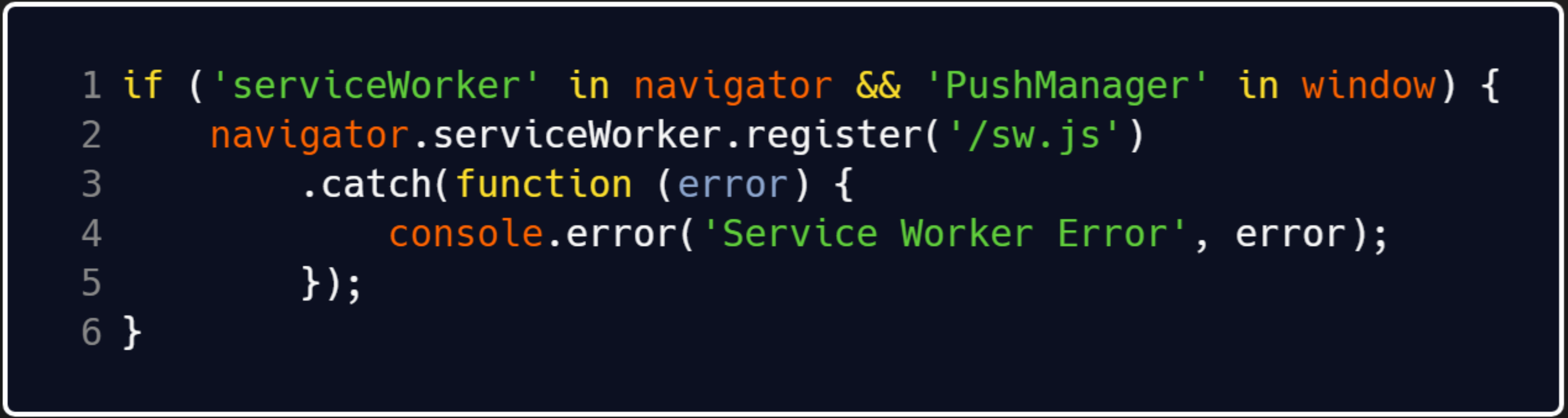
1. Service workers
2. VAPID keys

*I just needed to waste some space

Service Worker

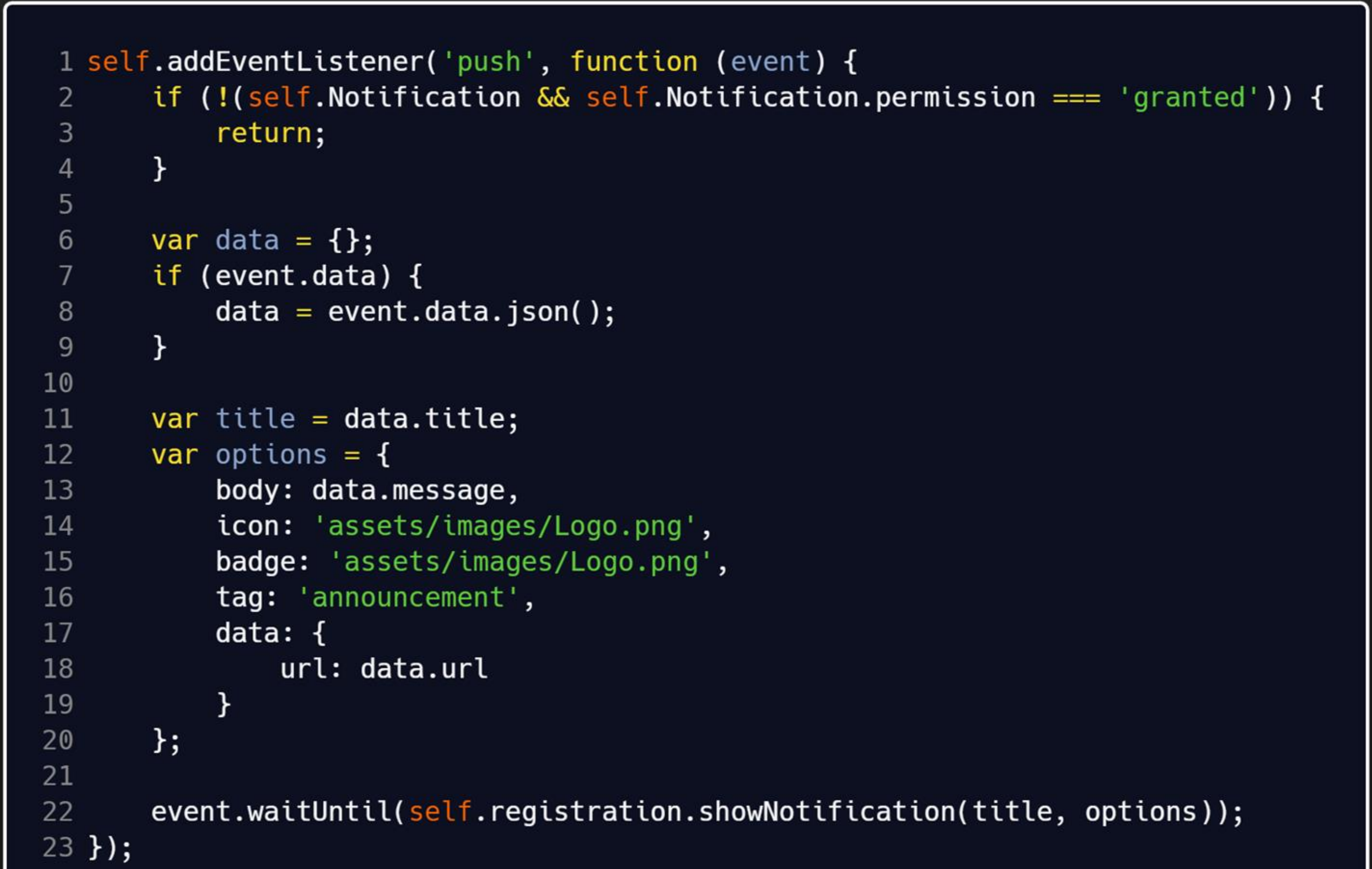
- “A service worker is a script that your browser runs in the background, separate from a web page, opening the door to features that don't need a web page or user interaction.”
- Used to listen to the Push events and then show notifications with the Push message
- Must be in root of web project (e.g. site.com/sw.js)

Registering the service worker



```
if ('serviceWorker' in navigator && 'PushManager' in window) {
    navigator.serviceWorker.register('/sw.js')
        .catch(function (error) {
            console.error('Service Worker Error', error);
        });
}
```

Listening for Push events



```
self.addEventListener('push', function (event) {
    if (!(self.Notification && self.Notification.permission === 'granted')) {
        return;
    }

    var data = {};
    if (event.data) {
        data = event.data.json();
    }

    var title = data.title;
    var options = {
        body: data.message,
        icon: 'assets/images/Logo.png',
        badge: 'assets/images/Logo.png',
        tag: 'announcement',
        data: {
            url: data.url
        }
    };

    event.waitUntil(self.registration.showNotification(title, options));
});
```

VAPID

- VAPID: Voluntary Application Server Identification
- Sign your message with the private key. Public key used to verify it was you.
- Push service can validate that the message was sent by your server
- The JWT data contains contact information if the push service needs to contact you

Push Notification Flow

End user (browser):

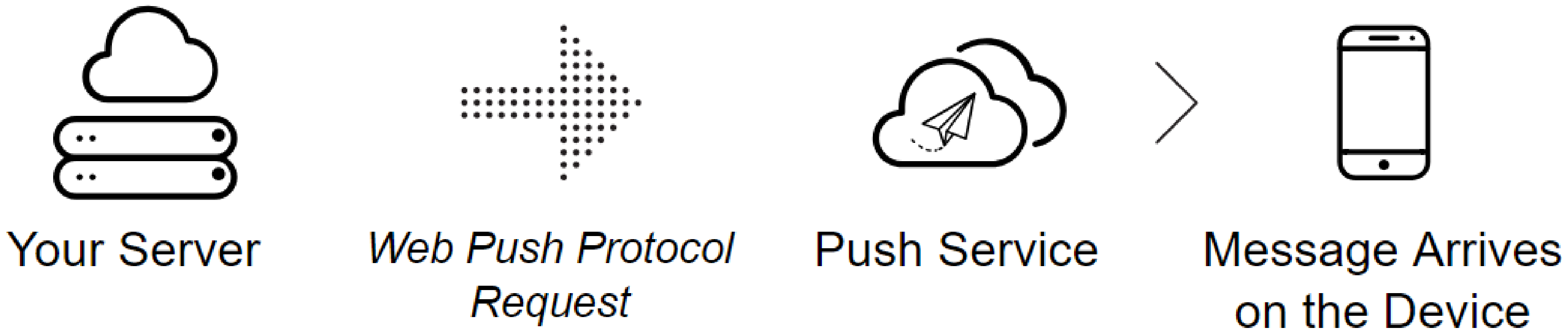
1. Browser registers service worker
2. User interacts with website to enable notifications
3. Code requests permission to send Notifications using API
4. Using VAPID public key, browser subscribes to Push service (varies depending on browser)
5. Send push subscription to the server to save and use later when sending announcement

Push Notification Flow

Sending push notification:

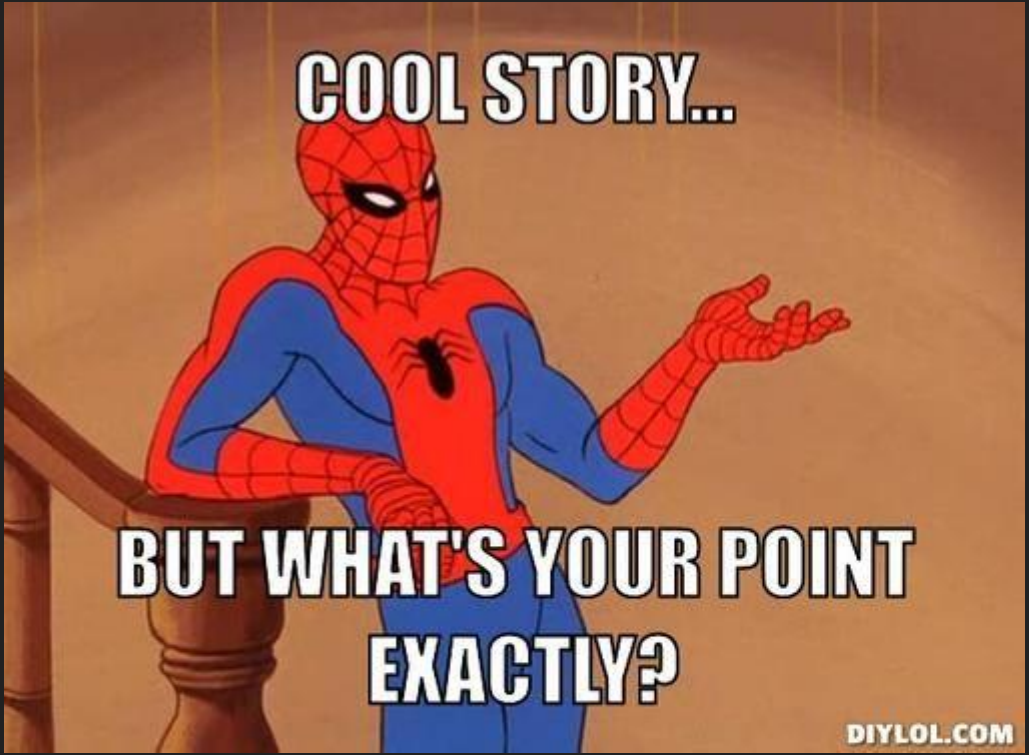
1. Enter the announcement details (title, text, url)
2. Iterate through stored subscriptions
3. Send a push notification using the subscription endpoint and VAPID keys to each subscription
    - Using web-push library to handle encryption and VAPID JWT tokens

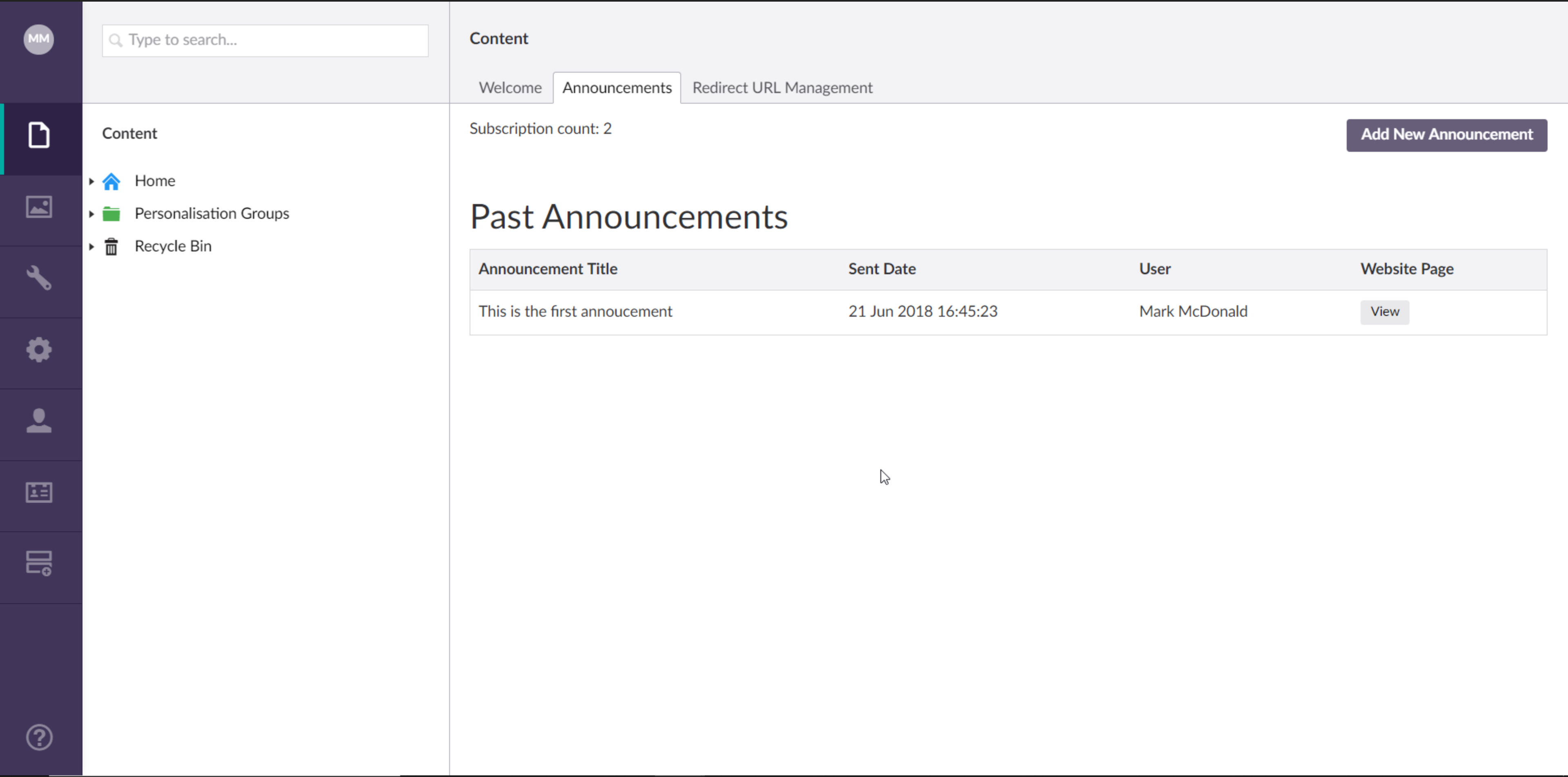
Push Notification Flow



Source: https://developers.google.com/web/fundamentals/push-notifications/web-push-protocol

Umbraco



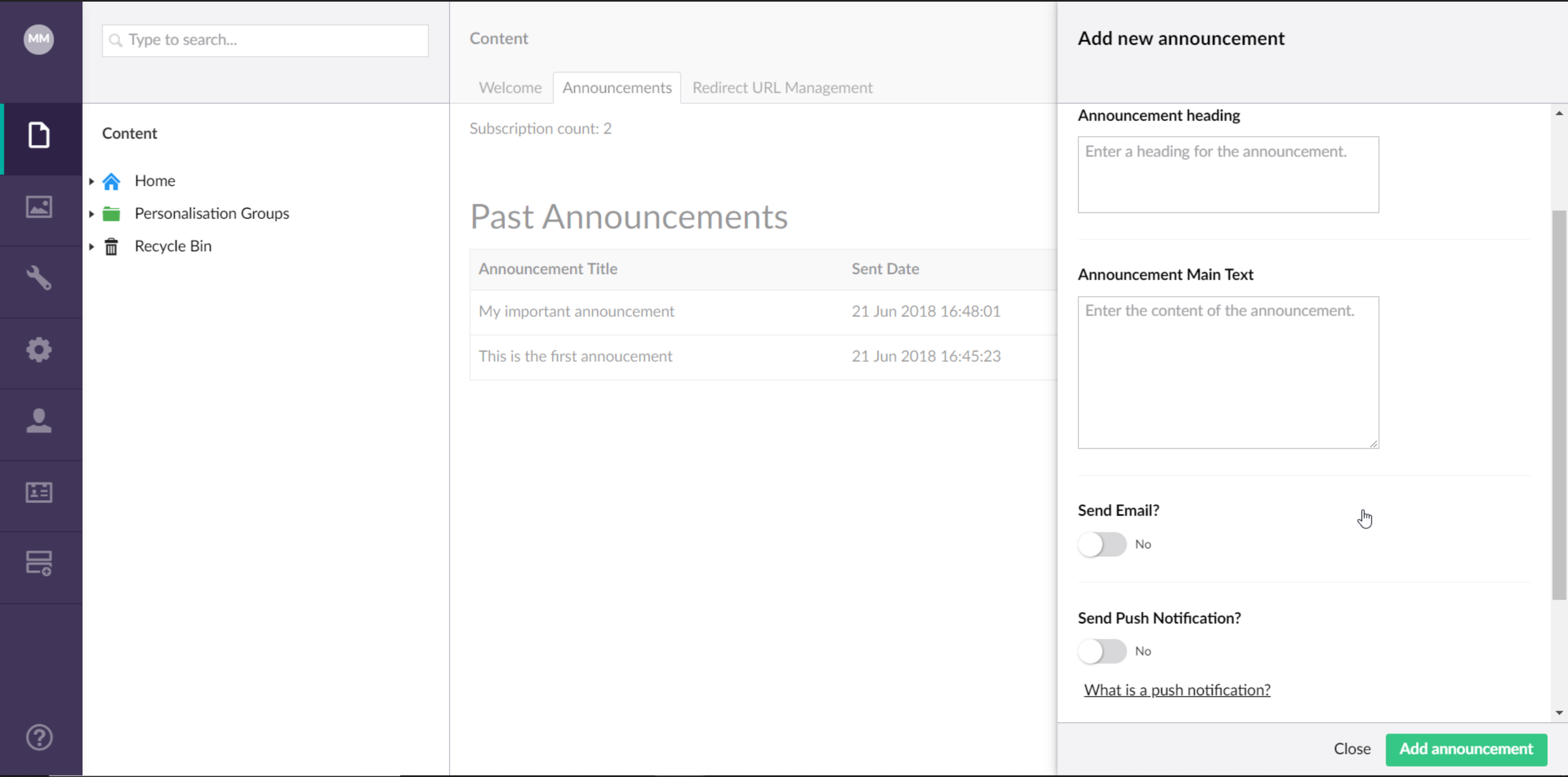


Content

Subscription count: 2

Past Announcements

Announcement Title	Sent Date	User	Website Page
This is the first annoucement	21 Jun 2018 16:45:23	Mark McDonald	View



Subscription count: 2

Past Announcements

Announcement Title	Sent Date
My important announcement	21 Jun 2018 16:48:01
This is the first annoucement	21 Jun 2018 16:45:23

Add new announcement

Announcement heading

Enter a heading for the announcement.

Announcement Main Text

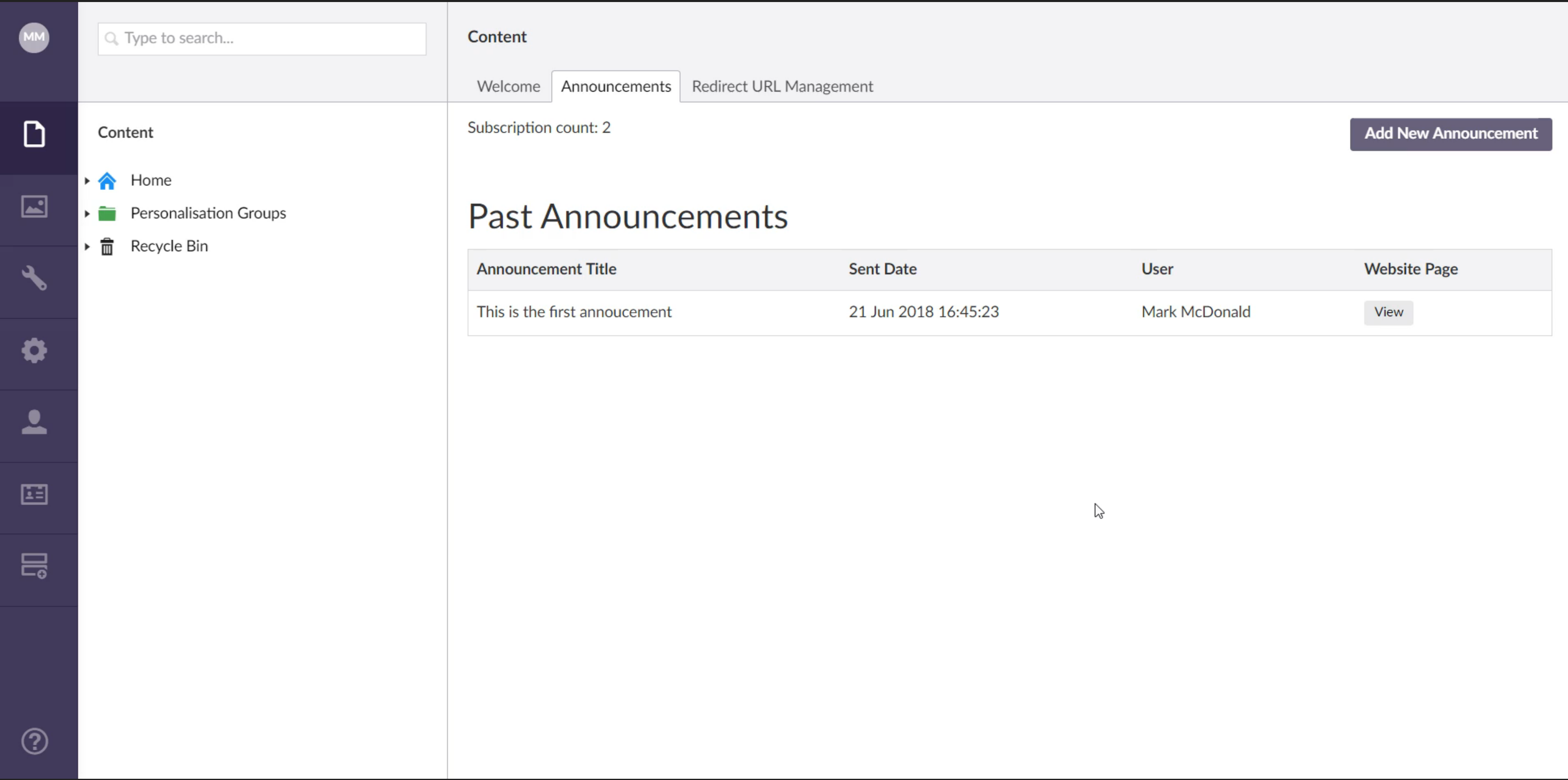
Enter the content of the announcement.

Send Email?

No

Send Push Notification?

No



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Resources

- https://github.com/web-push-libs/web-push-csharp
- https://developers.google.com/web/fundamentals/push-notifications/web-push-protocol
- https://developers.google.com/web/fundamentals/primers/service-workers/
- https://blog.mozilla.org/services/2016/04/04/using-vapid-with-webpush/
- https://developers.google.com/web/fundamentals/codelabs/push-notifications/