

***WEB SYNDICATION WITH
TYPO3 AND
ACTIVITYPUB***

Andreas Nedbal / Web Camp Venlo 2025

ABOUT ME

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TYPO3 Core Merger



How content is shared currently

RSS

Simple XML format that's basically just a different markup you serve of your posts.

Is aggregated and consumed by websites and users easily using a multitude of services and clients.

Problem: RSS feeds are way less popular than they were in the 2000s with systems and services dropping support for them.

NEWSLETTERS

Either built-in into websites (TYPO3 has multitudes of extensions for this) or via external providers (like MailChimp).

Depending on the type and target audience, either manually crafted or just listings of articles (or both).

Problem: E-Mail isn't the place where a lot of users frequent in, especially for content.

Additionally, if you handcraft newsletters you have to take care of ancient and kneecapped HTML (or a lot of tooling around it).

FEED AGGREGATION TO SOCIAL PLATFORMS

i.e. IFTTT/Zapier/etc.

Allows to ingest RSS feeds and similar sources and post/do things with them in a multitude of ways.

Nice to use if you are not a developer and want to have automated posting done quickly.

Problem: Integration cost is offset to service pricing to the user and capabilities and be limited in free options (especially after price ramps past 2022)

DIRECT PUBLISHING TO SOCIAL PLATFORMS

Using APIs to publish posts to social media platforms directly.

Problems:

- APIs are not as open anymore as they were 10 years ago
- Hurdle to get access to those APIs
- Incredibly high pricing tiers for some services (e.g. X, formerly Twitter)
- Completely locked down/complicated APIs (e.g. Meta services)

Meet ActivityPub

WHAT IS ACTIVITYPUB

ActivityPub is a decentralized social networking protocol based on the ActivityStreams 2.0 data format.

ActivityPub is an official W3C recommended standard published by the W3C Social Web Working Group.

It provides a client to server API for creating, updating and deleting content, as well as a federated server to server API for delivering notifications and subscribing to content.

WHO IS USING ACTIVITYPUB?



FLIPBOARD



WHO IS USING ACTIVITYPUB?



FLIPBOARD



WHY SUPPORT ACTIVITYPUB?

An open web standard not controlled by any single entity.

The platforms/instances are not controlled by a singular entity either, everyone can host their own instance and have their own local set of rules to fit their community.

This is ever so more important with the recent madness going on with CEOs of the big social networks.

WHY SUPPORT ACTIVITYPUB?

Allows content to be consumed by any software that also implements the protocol, enabling cross-software communication without extra integrations or code.

Cross-Software Federation by Example

With the example of Mastodon and Pixelfed



dansup ⋮

642 Posts

21K Followers

193 Following

dansup he/him

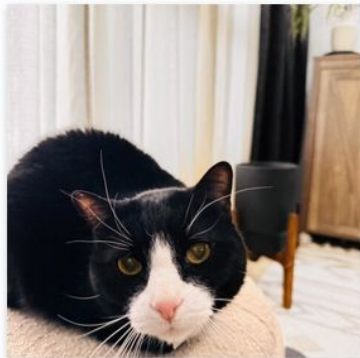
Hi, I'm the developer behind @Pixelfed! Also @dansup@mastodon.social he/him · canada · 🇨🇦 #pixelfed #design #webdev #pixelfedApp #supApp #loops #fedi22 dansup.com

Admin

Joined Fri Jun 01 2018

🗪 POSTS

📁 COLLECTIONS



https://pixelfed.social/dansup



Andy @pixel

What's on your mind?

Public English

500 Post

Home

Replied to [Fristeeee]



Erpel @Erpel@hai.z0ne.social

@fristi@56k.dile-up.nl gift me one and I will come visit once a year so you can ride on the pillion

Translate

0 [reply icon] [refresh icon] [star icon] [bookmark icon] [more icon]



Bunni @bunni@raru.re

Open at your own risk Show more

0 [reply icon] [refresh icon] [star icon] [bookmark icon] [more icon]

Amber boosted



Neil Brown @neil@mastodon.neilzone.co.uk

- You have a personal website, not linked with any business.
- That website has a form.
- Anyone can complete that form.
- When someone completes and submits that form, it goes to you and only to you.

With reference to s227(3)'s qualification "when acting in the course of the provider's business", discuss whether that web form is a user-to-user service for the purposes of the UK's Online Safety Act.

Or don't. I'm not your boss.



Home

Notifications

Explore

Live feeds

Private mentions

Bookmarks

Favorites

Lists

Preferences

Moderation

Administration

https://pixelfed.social/dansup



Andy
@pixel



What's on your mind?



Public



English



500

Post

Search results

All

Profiles

Hashtags

Posts



Profiles

See all



dansup @dansup@pixelfed.social
12K followers

Follow

Hashtags

See all

#dansup

0 people in the past 2 days

#dansupisoverparty

0 people in the past 2 days

mastodon

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Andy
@pixel



What's on your mind?



Public



English



500

Post



dansup

@dansup [pixelfed.social](#)



Follow

PERSONAL NOTE

Click to add note

Hi, I'm the developer behind [@Pixelfed!](#) Also [@dansup@mastodon.social](#) [#pixelfed](#) [#design](#) [#webdev](#) [#pixelfedApp](#) [#supApp](#) [#loops](#)

JOINED
Jun 01, 2018

613 posts 174 following 12K followers

Posts

Posts and replies

Media

Home

Notifications

Explore

Live feeds

Private mentions

Bookmarks

Favorites

Lists

Preferences

Moderation

Administration

WHAT COULD TYPO3 SITES PUBLISH?

Anything you want, basically!

- Your publications, like news, events, etc.
How cool would it be to follow [@news@yourwebsite.com](#)?
- You can go even further and look into supporting federation with specific Fediverse-software, like:
 - Pixelfed, if you have an image gallery?
 - Mobilizon for your events
 - PeerTube, if you publish video content on your website

WHAT ELSE?

Instead of just publishing content into the network, you could also process incoming activities!

Got a reply to a news post via ActivityPub? Add that to the comments on your site!

Someone liked the post? Add a public like count somewhere or just use it for your statistics and analytics internally!

How does it work?

The technical part

***Finding an
ActivityPub-supporting site***

(actually optional, but everyone implements it!)

FINDING AN ACTIVITYPUB-SUPPORTING SITE

Using the NodeInfo protocol a site can detail what software it is using and what capabilities it has.

The initial endpoint to access nodeinfo is `/.well-known/nodeinfo`

That endpoint then includes a list of nodeinfo endpoints for specific supported versions of the NodeInfo protocol.

DESU.SOCIAL /.WELL-KNOWN/NODEINFO

```
{
  "links": [
    {
      "rel": "http://nodeinfo.diaspora.software/ns/schema/2.0",
      "href": "https://desu.social/nodeinfo/2.0"
    }
  ]
}
```


DESU.SOCIAL /.WELL-KNOWN/NODEINFO

```
{
  "links": [
    {
      "rel": "http://nodeinfo.diaspora.software/ns/schema/2.0",
      "href": "https://desu.social/nodeinfo/2.0"
    }
  ]
}
```

DESU.SOCIAL /NODEINFO/2.0

```
{
  "version": "2.0",
  "software": {
    "name": "mastodon",
    "version": "4.3.3"
  },
  "protocols": [
    "activitypub"
  ],
  "services": {
    "outbound": [],
    "inbound": []
  },
  "usage": {
    "users": {
      "total": 2,
      "activeMonth": 2,
      "activeHalfyear": 2
    },
    "localPosts": 16117
  },
  "openRegistrations": false,
  "metadata": {
    "nodeName": "desu.social",
    "nodeDescription": "Welcome to desu.social, pixeldesu's personal Mastodon instance!"
  }
}
```

Finding user endpoints

(the screenshots demo, but technical)

FINDING USER ENDPOINTS

Using another web standard, **WebFinger**, we can ask for the location of a users profile endpoints (or other data if supported) from a unified endpoint.

The WebFinger endpoint is under `/.well-known/webfinger`

For my profile

pixel@desu.social

the query to WebFinger would be

https://desu.social/.well-known/webfinger?resource=acct: pixel@desu.social

```
{
  "subject": "acct:pixel@desu.social",
  "aliases": [
    "https://desu.social/@pixel",
    "https://desu.social/users/pixel"
  ],
  "links": [
    {
      "rel": "http://webfinger.net/rel/profile-page",
      "type": "text/html",
      "href": "https://desu.social/@pixel"
    },
    {
      "rel": "self",
      "type": "application/activity+json",
      "href": "https://desu.social/users/pixel"
    },
    {
      "rel": "http://ostatus.org/schema/1.0/subscribe",
      "template": "https://desu.social/authorize_interaction?uri={uri}"
    },
    {
      "rel": "http://webfinger.net/rel/avatar",
      "type": "image/png",
      "href": "https://cdn.masto.host/desusocial/accounts/avatars/000/000/001/original/3e64d3387143e1ca.png"
    }
  ]
}
```

```
{
  "subject": "acct:pixel@desu.social",
  "aliases": [
    "https://desu.social/@pixel",
    "https://desu.social/users/pixel"
  ],
  "links": [
    {
      "rel": "http://webfinger.net/rel/profile-page",
      "type": "text/html",
      "href": "https://desu.social/@pixel"
    },
    {
      "rel": "self",
      "type": "application/activity+json",
      "href": "https://desu.social/users/pixel"
    },
    {
      "rel": "http://ostatus.org/schema/1.0/subscribe",
      "template": "https://desu.social/authorize_interaction?uri={uri}"
    },
    {
      "rel": "http://webfinger.net/rel/avatar",
      "type": "image/png",
      "href": "https://cdn.masto.host/desusocial/accounts/avatars/000/000/001/original/3e64d3387143e1ca.png"
    }
  ]
}
```

Profile data

Let's get into the format

PROFILE DATA

Where the endpoints are depends on the application and the structure, as long as you have WebFinger point to it, you can have it on any route!

The representation of the data is important though, saw the application/activity+json content type? That's ActivityStreams 2.0!

ActivityStreams is a model to represent different activities, and it follows JSON-LD.

Known from Structured Data and SEO!

BASE STRUCTURE OF ACTIVITYSTREAMS

```
{  
  "@context": "https://www.w3.org/ns/activitystreams",  
  "type": "Type",  
  // ...  
}
```

EXAMPLE USER STRUCTURE

```
{
  "@context": [
    "https://www.w3.org/ns/activitystreams",
    "https://w3id.org/security/v1",
  ],
  "id": "https://desu.social/users/pixel",
  "type": "Person",
  "following": "https://desu.social/users/pixel/following",
  "followers": "https://desu.social/users/pixel/followers",
  "inbox": "https://desu.social/users/pixel/inbox",
  "outbox": "https://desu.social/users/pixel/outbox",
  "preferredUsername": "pixel",
  "name": "Andy",
  "summary": "<p>28 year old webdev professional, ...</p>"
}
```

EXAMPLE USER STRUCTURE

```
{
  "@context": [
    "https://www.w3.org/ns/activitystreams",
    "https://w3id.org/security/v1",
  ],
  "id": "https://desu.social/users/pixel",
  "type": "Person",
  "following": "https://desu.social/users/pixel/following",
  "followers": "https://desu.social/users/pixel/followers",
  "inbox": "https://desu.social/users/pixel/inbox",
  "outbox": "https://desu.social/users/pixel/outbox",
  "preferredUsername": "pixel",
  "name": "Andy",
  "summary": "<p>28 year old webdev professional, ...</p>"
}
```

Inbox and Outbox

Where things go and things come from!

INBOX AND OUTBOX

The inbox endpoint is where you send activities to someone, and the outbox endpoint is where you display your public activities for others to fetch (which will not be the main way for them to receive them, however)

COLLECTIONS

ActivityStreams has a type for collections as well, called Collection or even OrderedCollection, latter being used usually everywhere.

```
{
  "@context": "https://www.w3.org/ns/activitystreams",
  "id": "https://desu.social/users/pixel/outbox",
  "type": "OrderedCollection",
  "totalItems": 16098,
  "first": "https://desu.social/users/pixel/outbox?page=true",
  "last": "https://desu.social/users/pixel/outbox?min_id=0&page=true"
}
```

Sending activities

Now we're talking!

SENDING ACTIVITIES

Activities are sent to two distinct endpoints depending on who they should reach.

If you specifically interact with a user, you send an activity to their inbox.

If you make a regular post that should fan out to your followers, you send it to shared inboxes of your followers instances.

EXAMPLE: FOLLOWING SOMEONE

Let's say I want to follow the account @alice@mastodon.social

```
{
  "@context": "https://www.w3.org/ns/activitystreams",
  "id": "https://desu.social/users/pixel/activity/123456789",
  "type": "Follow",
  "actor": "https://desu.social/users/pixel",
  "object": "https://mastodon.social/users/alice"
}
```

Verifying authenticity

The internet is a wild place

VERIFYING AUTHENTICITY

In order to make sure that an activity is really from the user that the request originates from, signatures can be provided in the headers of the POST requests.

The web standard these signatures follow is **HTTP Message Signatures**.

Profile endpoints for supporting platforms include a public key field, which you can then use to verify the attached signatures.

***That was a lot, and there's
more!***

But I'll spare you the rest.

Sneak Peek 🙈

typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu

JSON Raw Data Headers

Save Copy Collapse All Expand All Filter JSON

```
@context:
  0: "https://www.w3.org/ns/activitystreams"
  1: "https://w3id.org/security/v1"
id: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu"
type: "Person"
preferredUsername: "pixeldesu"
following: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu/following"
followers: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu/followers"
inbox: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu/inbox"
outbox: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu/outbox"
name: "Andy"
summary: ""
url: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu"
manuallyApprovesFollowers: false
discoverable: true
published: "2025-01-01T21:34:45Z"
publickey:
  id: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu#main-key"
  owner: "https://typo3-activitypub.ddev.site/typo3-activitypub/@pixeldesu"
  publicKeyPem: ""
endpoints:
  sharedInbox: "https://typo3-activitypub.ddev.site/typo3-activitypub/inbox"
```

Questions?

Thanks for listening!

Hope you enjoyed this talk :)

Feedback? Want to chat?

Fediverse (Mastodon/...):

@pixel@desu.social

Twitter:

@pixeldesu

TYPO3 Slack:

@pixeldesu

SOURCES

- <https://activitypub.rocks>
- ActivityPub Standard:
<https://www.w3.org/TR/activitypub/>
- Activity Vocabulary:
<https://www.w3.org/TR/activitystreams-vocabulary/>
- WebFinger:
<https://datatracker.ietf.org/doc/html/rfc7033>
- HTTP Message Signatures:
<https://datatracker.ietf.org/doc/rfc9421/>