

Authenticated Transfer

BoF IETF 124

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BoF Session Outline

- **Problem Statement:** Why is this needed?
- **Proposed Architecture:** What is Authenticated Transfer?
- **Venue:** Why IETF, or any Standards Body?
- **Scope:** What components would a WG focus on?
- **Ecosystem Perspectives:** Does it address their needs?
- **Questions for Discussion**

Why Another Social Web Protocol?

- Global aggregations are required for core product features
 - search, discovery, recommendations, etc
 - major control point in traditional web
- Redistribution of primary data (not metadata) across organizational boundaries
- Ability to move individual accounts without breaking social web of relationship and interactions
- Separate publication of data and control of identity from network location

What is Authenticated Transfer (AT)?

- Framework composed of modular protocol components
- Self-Certifying Public Data
 - content addressed data structure (repository) for storage and synchronization
 - streaming updates and cryptographic authenticity
 - supports data deletion
- Identity layer abstracted from network layer
 - persistent account identifiers in references
- Separation of "data sync" and "social app" layers
 - schema system for data and APIs, no built-in social primitives
- Permission-less, low-latency, globally-aggregated views across organizational boundaries

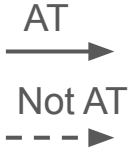
Authority: Account vs Network Location

`at:// <account> / <schema-type> / <record-key>`

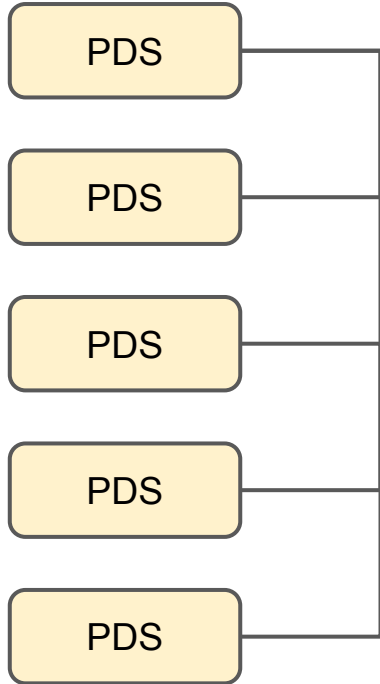
Persistent Account ID.
Controlled by end user,
resolves to current host
(indirection layer)

Namespaced App Data Schemas.
Predictable validation for
interoperation, supports schema
evolution

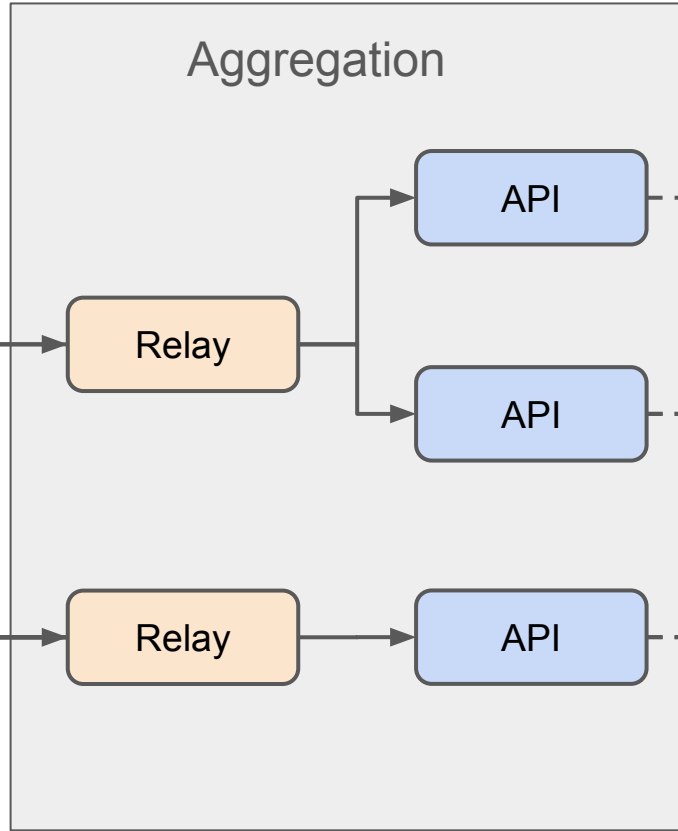
AT Data Flow



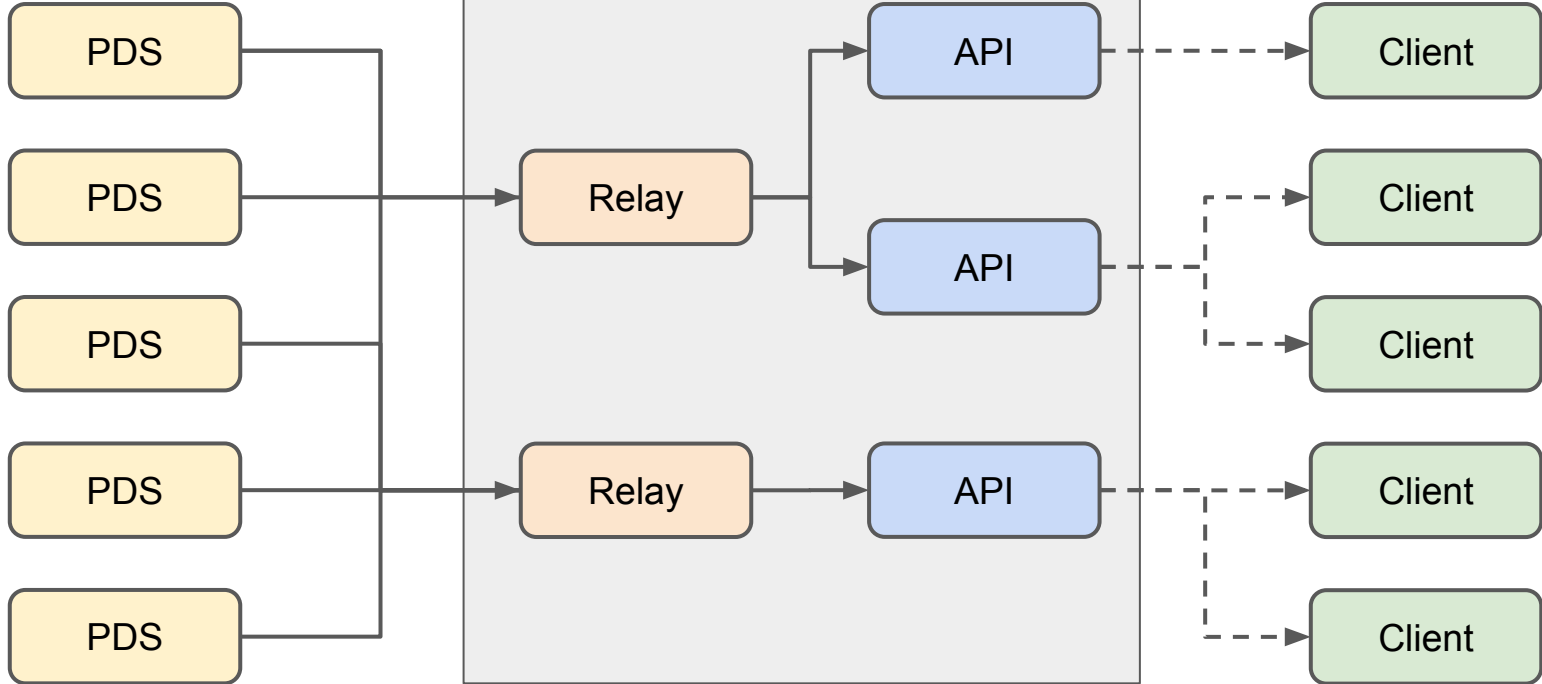
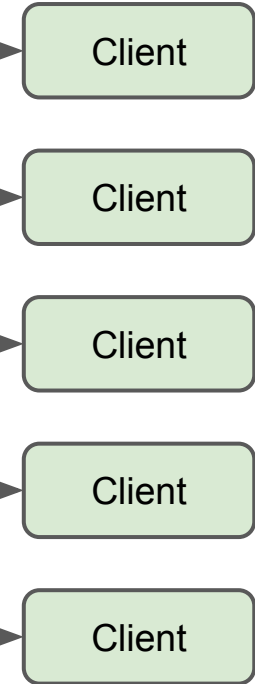
Identity & Hosting

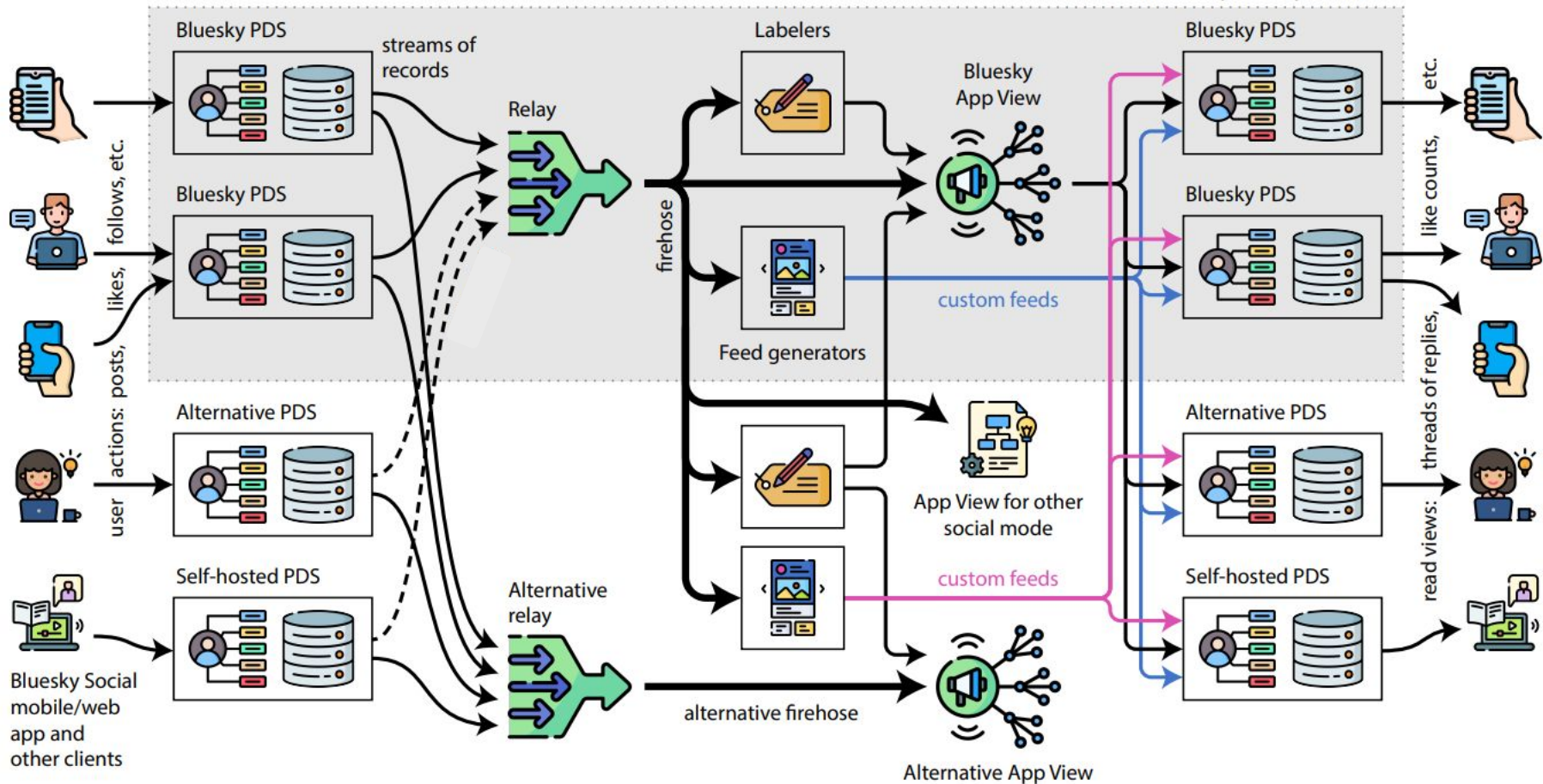


Aggregation



Web Client





AT Network By The Numbers

3,000	PDS instances (hosts)
500	schemas published
500	full firehose events/sec
16 billion	data records published
170	dev conference in-person attendees (2025)

Contrasting Architectures

	AT	ActivityPub	RSS/Atom	Email
Content	Full Data	Metadata	Metadata	Full Data
Mechanics	Event Stream	Message Passing	Polling	Message Passing
Audience	Broadcast	Hybrid	Broadcast	Addressed
Influences	P2P, git, SSB, CT	RSS, PubSub		
Serialization	CBOR, JSON	JSON-LD	XML	
Network Topology	Global Web	Federated Communities		

Venue: Why a Standards Body?

- Neutral venue & structure for protocol evolution
 - Conflict of interest for single for-profit company to control future of protocol
- Confidence for larger organizations to build and interoperate
- Expert review & feedback
 - Security, extension points, and general correctness

Venue: Things We Know About IETF Process

- Just looking for a rubber stamp? **No**
- Willing to cede change control? **Yes**
- You know this is going to be a lot of work? **Yes**
- Participate as individuals, not a company
- Identity systems are particularly complicated

Scope: Protocol Framework Components

- **App Features:** Bluesky, blogging, etc
- **Schema System:** app interoperability via data and APIs
- **Data Synchronization:** core of "Authenticated Transfer"
- **Data Graph:** serialization and linkage
- **Identity and Auth**

Possible Scope of AT @ IETF

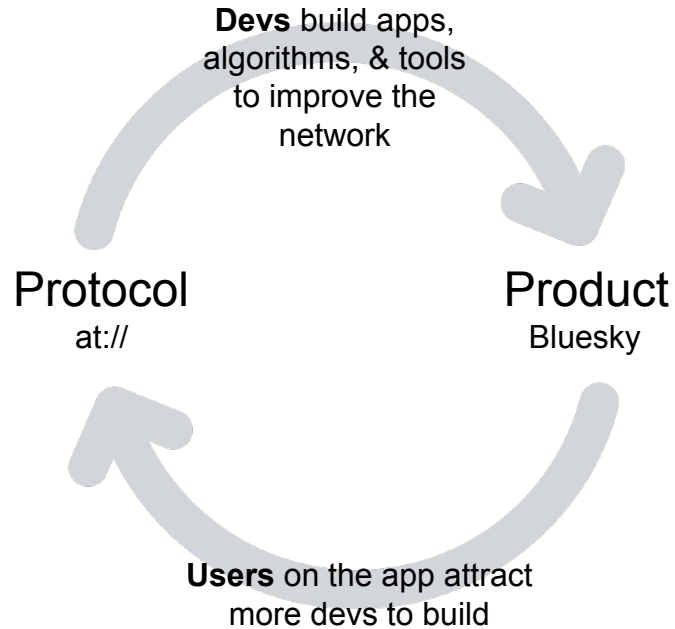
	Existing	Initial WG	Maybe Later	Uncertain	Not IETF
App Features					
Schema System					
Data Sync					
Data Graph					
Identity / Auth					

Bluesky and AT

- Microblogging app built on AT
- 40 million users
- All posts, follows, profiles, etc published through AT
- Differentiating feature: custom feeds
 - Only possible through global public broadcast protocol
 - Over 50k Bluesky feeds
- Robust client ecosystem
 - Relies on open data and APIs

The screenshot shows a Bluesky social media interface. At the top, the profile of 'Atmosphere and atproto' (@ngerakines.me) is visible with 21 likes. The main tweet is from 'Boris @bmann.ca' (1h) with 2 replies, 2 retweets, and 27 likes. The tweet text reads: 'brooklyn atproto meetup oct 2025 Let's get together to hang in Brooklyn and talk atproto! We'll meet at Lowlands, a great neighborho... smokesignal.events'. Below this are two replies. The first reply is from 'verdverm @verdverm.com' (9h) with 5 likes, discussing ATProto notifications and a DM bot. The second reply is from 'blebbit/testnet' (14 likes), with a link to 'github.com/blebbit/test...'. The bottom navigation bar shows icons for home, search, messages, notifications, and profile.

Bluesky and AT



A marketplace of algorithms

50K+ custom, third-party feeds

Gives users control



Helps communities form



Science

by @bosset.social

A curated feed from Bluesky professional scientists, science communicators, and photographers.



Tony

Holy forking shirtballs.

I really should have known better than to summon fountain pen BlueSky before I went to sleep.

1 28

Lets developers experiment



Quiet Posters

by @why.bsky.team

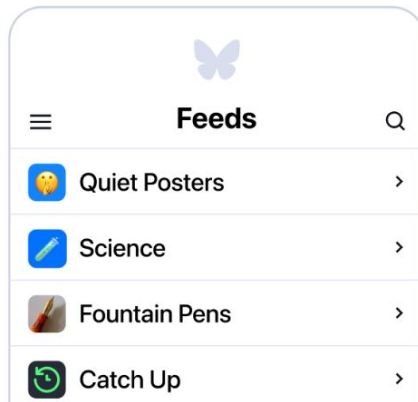
Posts from your quieter follows



Catch Up

by @skyfeed.xyz

Most popular posts from the last 24 hours



Community-driven moderation

100+ independent moderation services

Stackable services let you select the moderators you trust

Report post

To whom would you like to send this report?



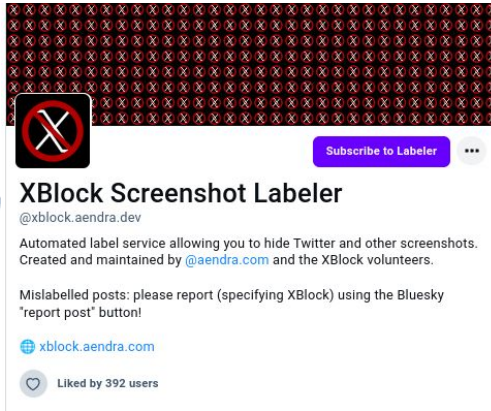
Bluesky Moderation Service
@moderation.bsky.app



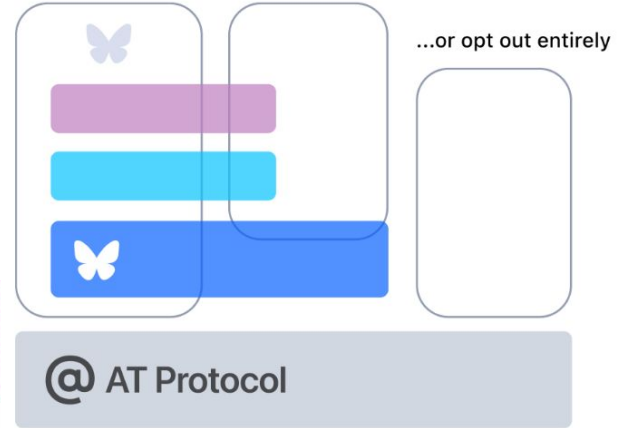
XBlock
@xblock.aendra.dev

To create your perfect experience

- Hide "Rude" posts
- Hide spoilers
- Hide screenshots from Twitter
- Hide pictures of spiders



A composable architecture lets other apps build on top of Bluesky's moderation...



(other invited projects present)

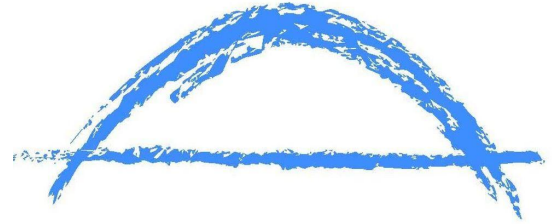
AT Ecosystem - Graze

- Custom feed/algorithm builder
- 6500 Feeds
- 8.2M Users
- Fully hydrated metadata firehose for devs



AT Ecosystem - BridgyFed

- Bridge between AT and ActivityPub
- Full implementation of AT Repo/Sync in Python
- 120k users



AT Ecosystem



Semble

Social knowledge
network for researchers



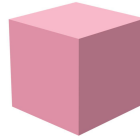
Graze

E2EE Messaging on
MLS



Skylight

Short form video



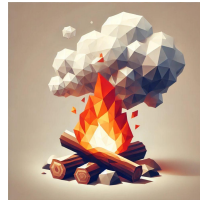
Stream.place

Live streaming video



Leaflet

Delightful blogging



Smoke Signal

Events

Recent Activities at IETF

- Side-Meeting at IETF 123 (Madrid)
- Internet Drafts
 - AT Architecture Overview: [draft-newbold-at-architecture](#)
 - Repository and Sync: [draft-holmgren-at-repository](#)
- Mailing List: atp@ietf.org
- Adjacent Working Groups
 - OAuth: draft-ietf-oauth-client-id-metadata-document (feedback and implementation)
 - DNSOP: draft-ietf-dnsop-integration (co-author)

Concept of a WG Charter

- Repository Data Structure (Merkle Search Tree, CBOR)
- Repository Synchronization (export format, "Firehose")
- Agnostic to identity layer and schema system

Actual text and discussion at a separate WG-forming BoF