

BLUESKY ARCHITECTURE COMPARED TO OTHER SOCIAL MEDIA SERVICES

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- Bluesky – The Relay and the PDS
- Bluesky – Moderation
- Bluesky
- Resources and further reading



INTRODUCTION



ÉIBHEAR Ó HANLUAIN



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- IT professional since 1994



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 - [Implementations](#)
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 - [Representations](#) to government organisations

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- This presentation uses diagrams created using [Strucutizr](#)
 - `autoLayout` throughout



WHAT IS BLUESKY



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 - Vision of a decentralised service
 - Inspired by Mike Masnick's 2019 "[Protocols, Not Platforms: A Technological Approach to Free Speech](#)" paper
 - Plan was for Twitter to move all its users to the new platform when ready

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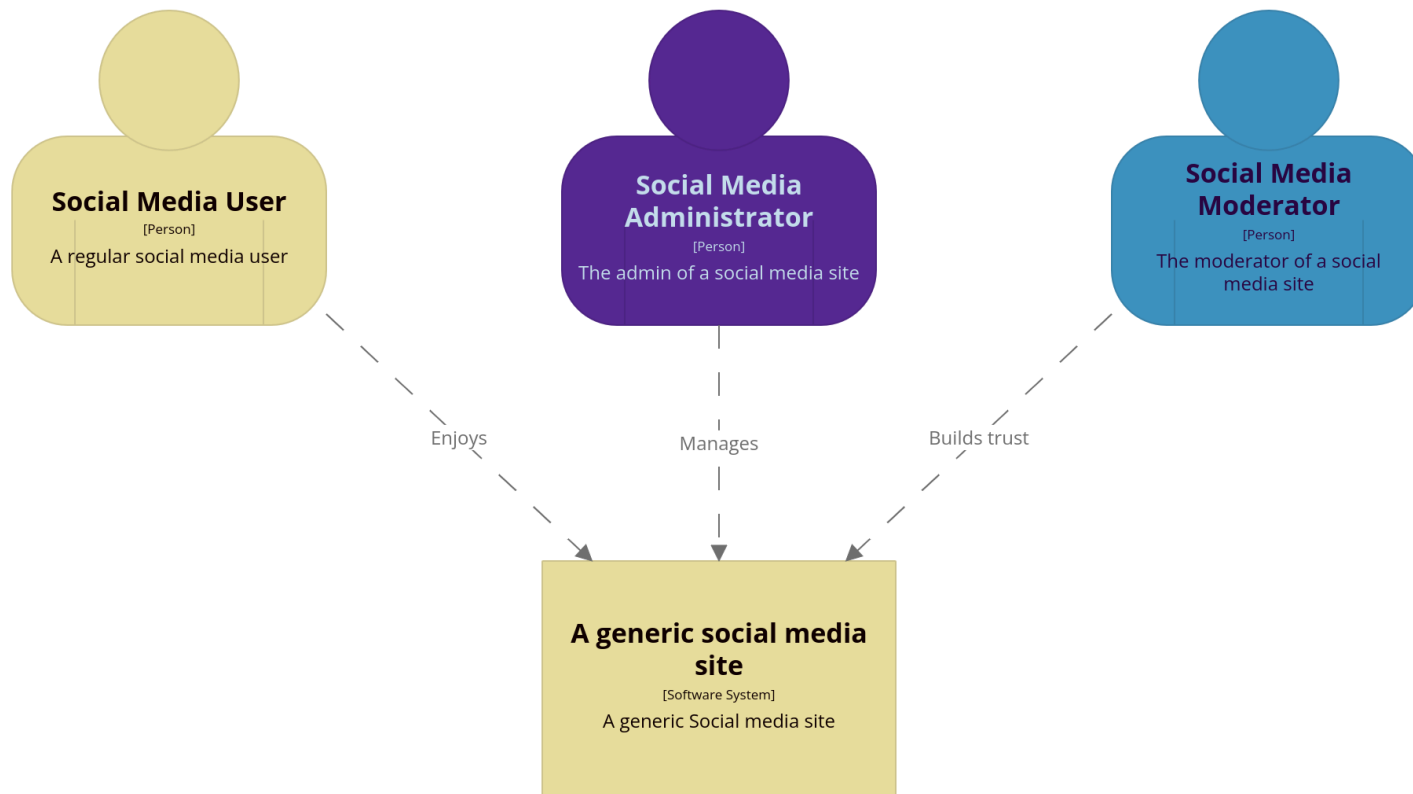
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- April 2024, Dorsey resigns from Bluesky board.

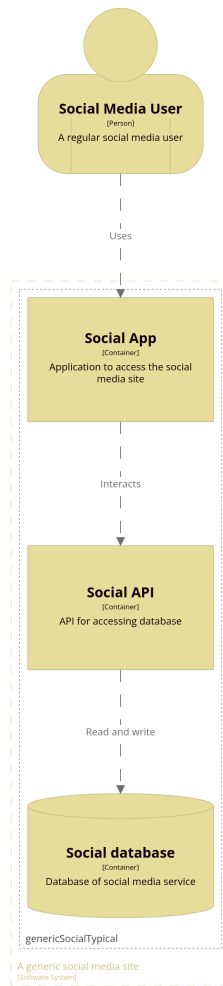


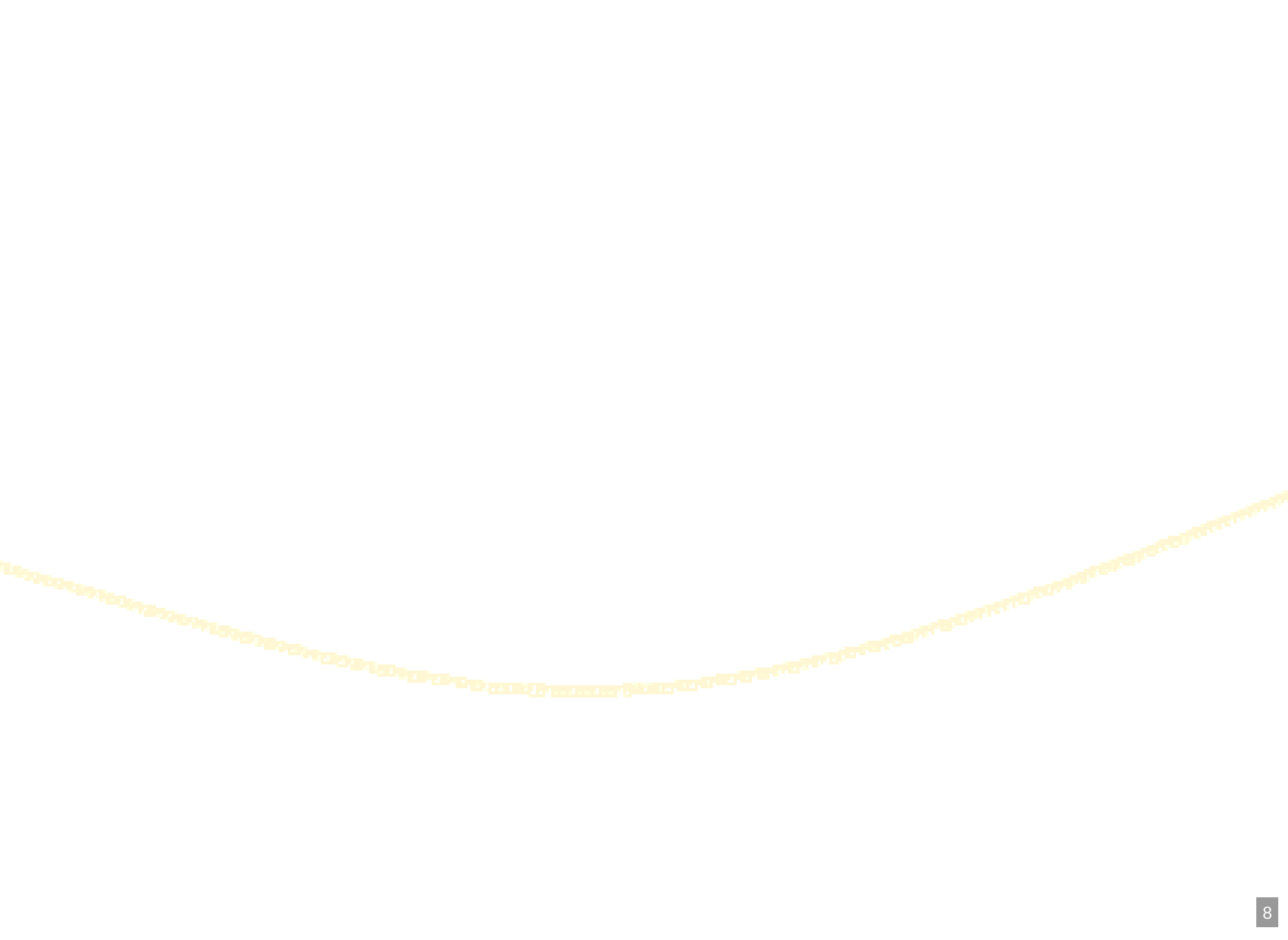
GENERAL SOCIAL MEDIA ARCHITECTURES

SIMPLISTIC VIEW 1/2 – OVERVIEW

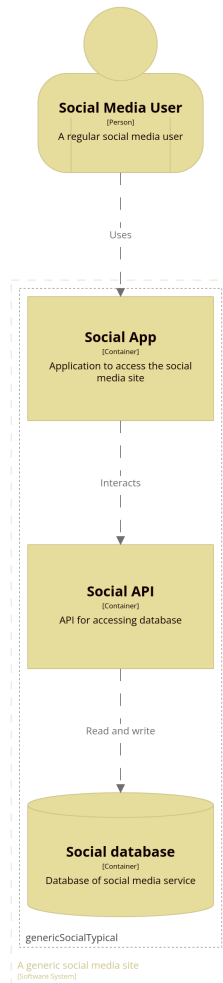


SIMPLISTIC VIEW 2/2 – SERVICES

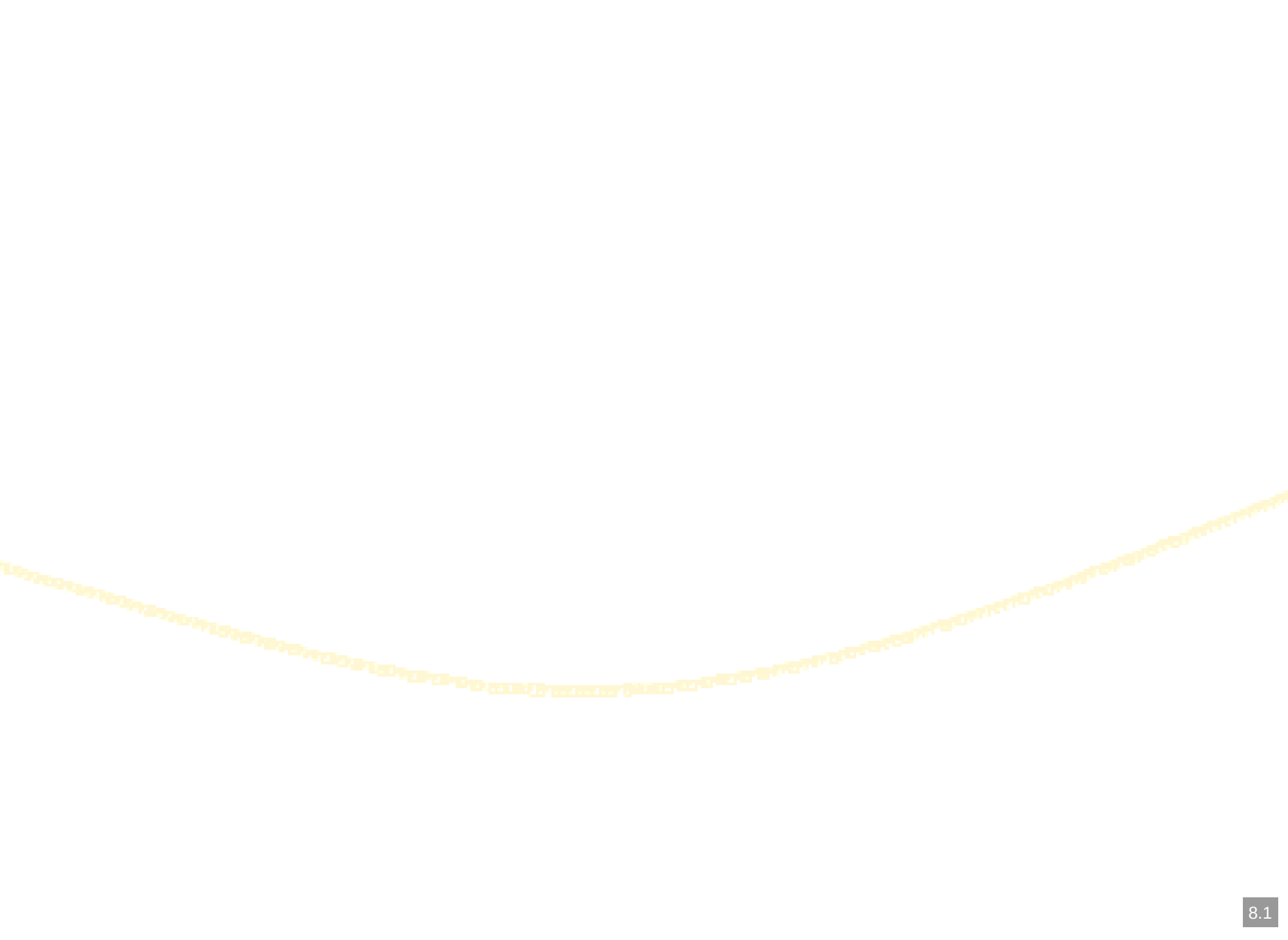




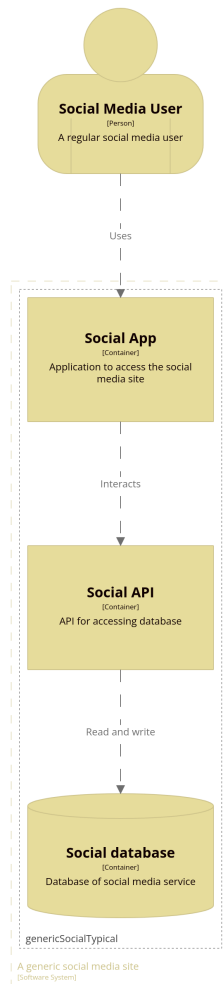
SIMPLISTIC VIEW 2/2 – SERVICES



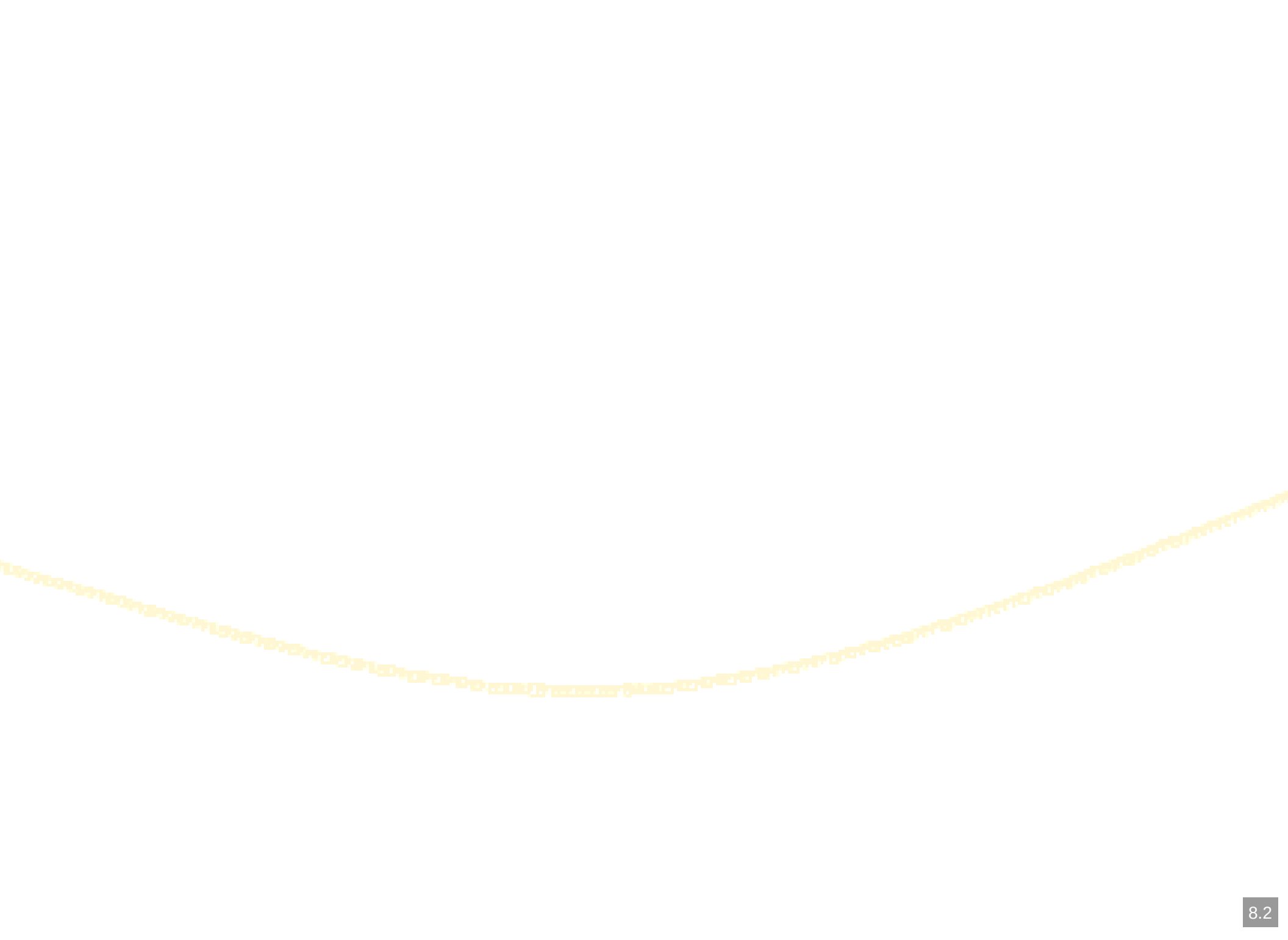
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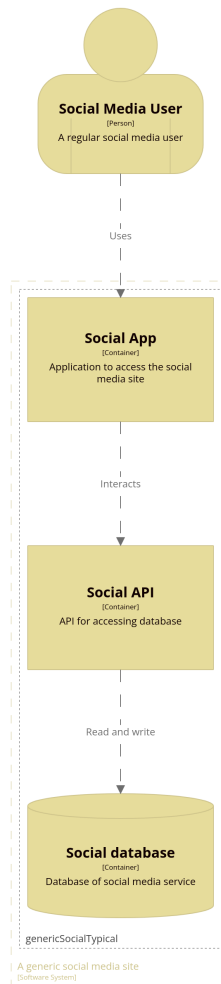
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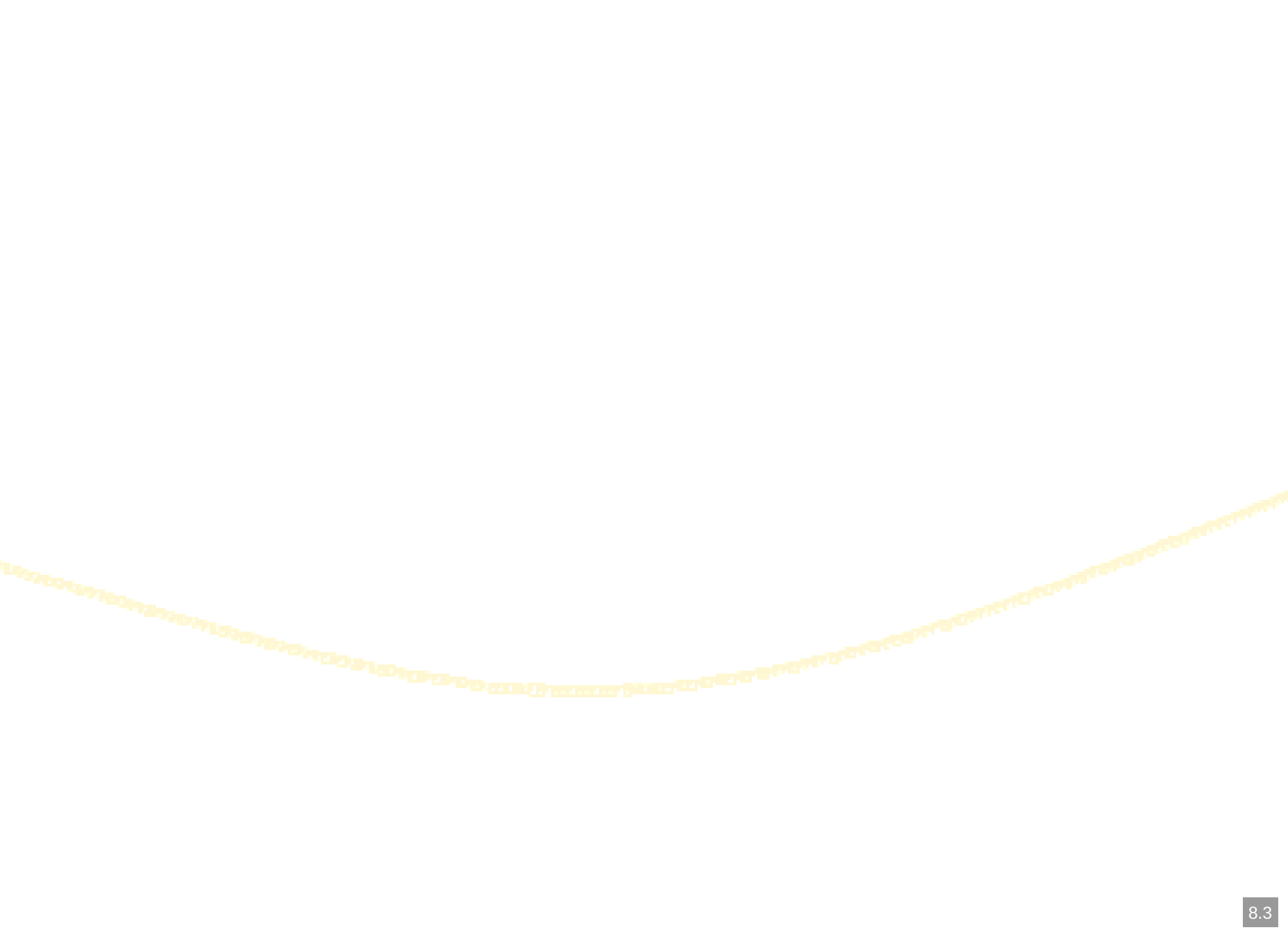
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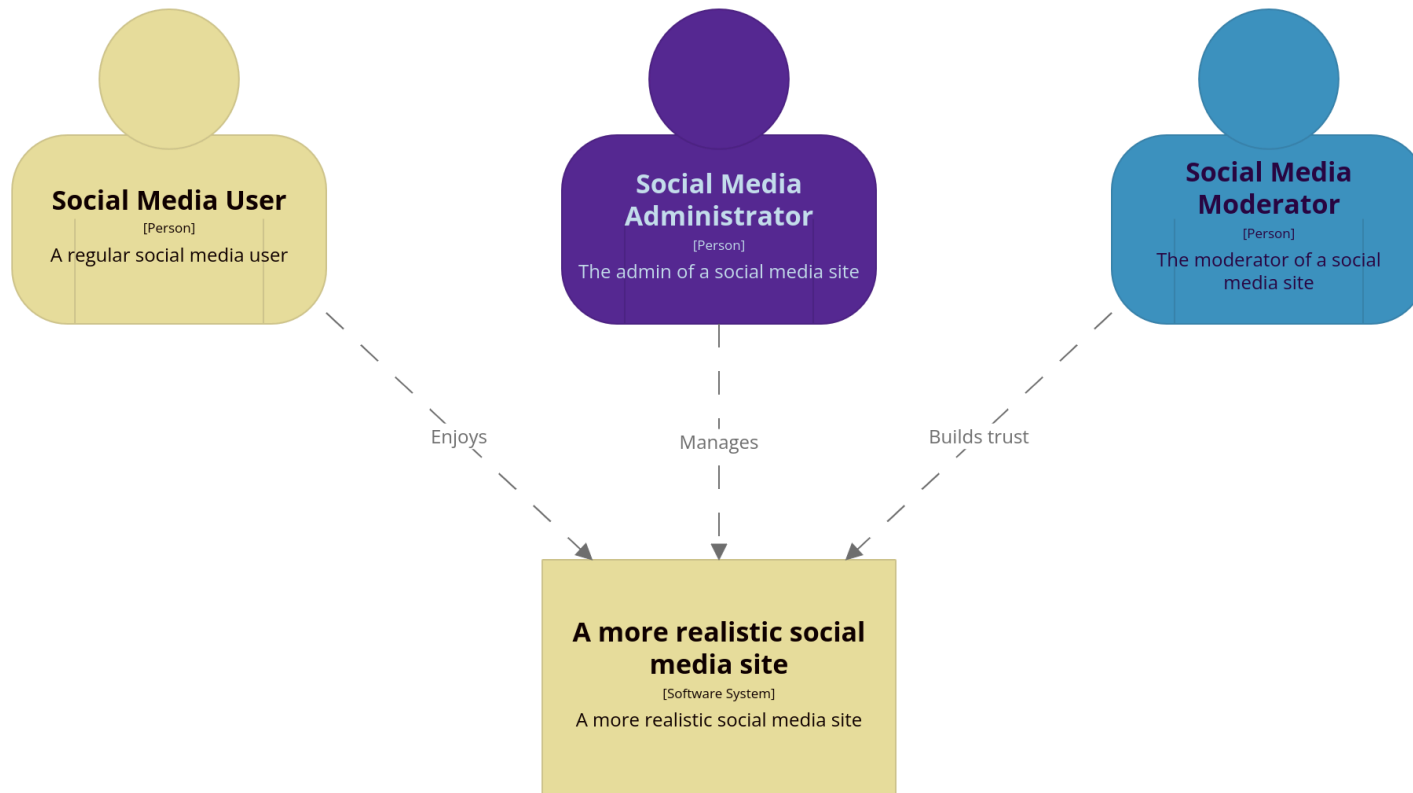
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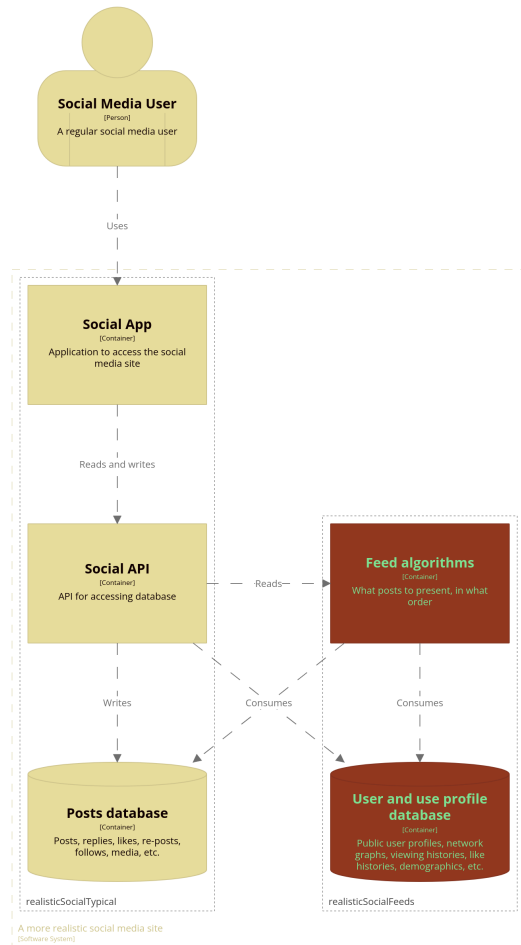
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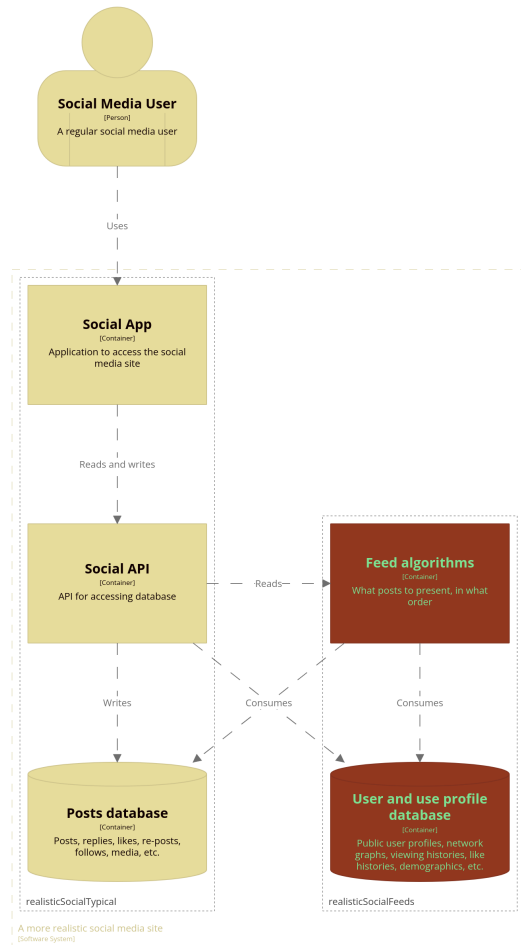
MORE REALISTIC VIEW 1/4 – OVERVIEW



MORE REALISTIC VIEW 2/4 – BASIC SERVICES

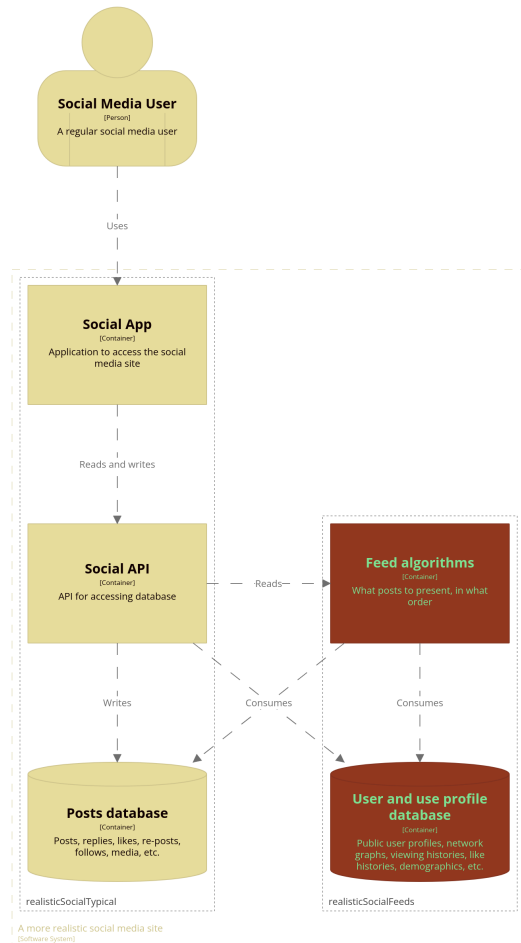


MORE REALISTIC VIEW 2/4 – BASIC SERVICES



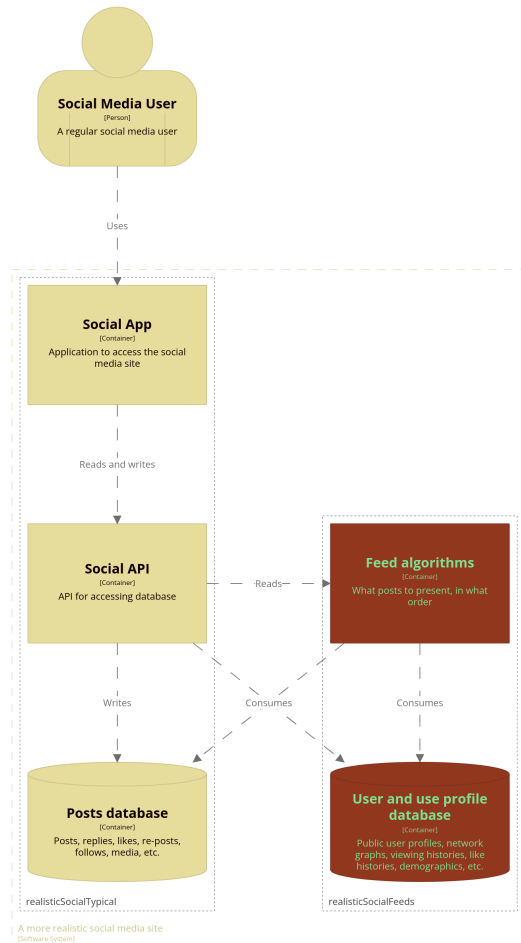
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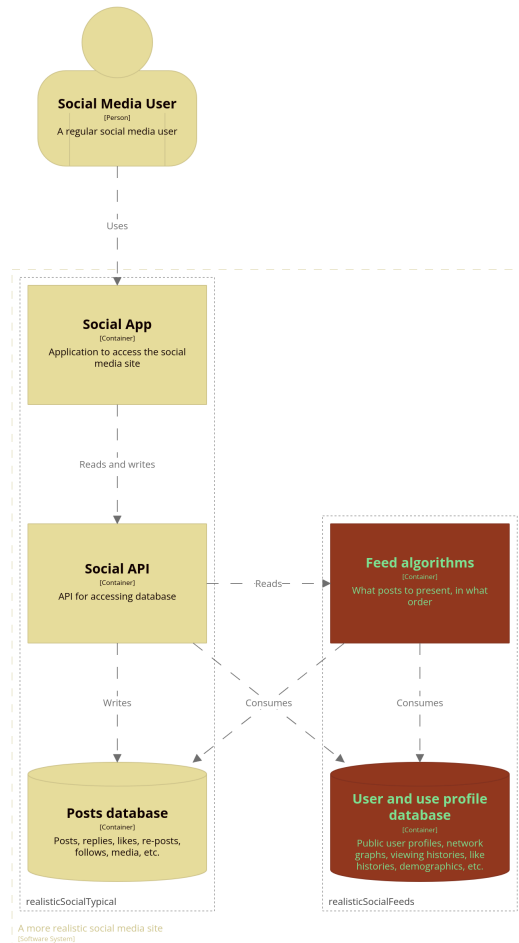
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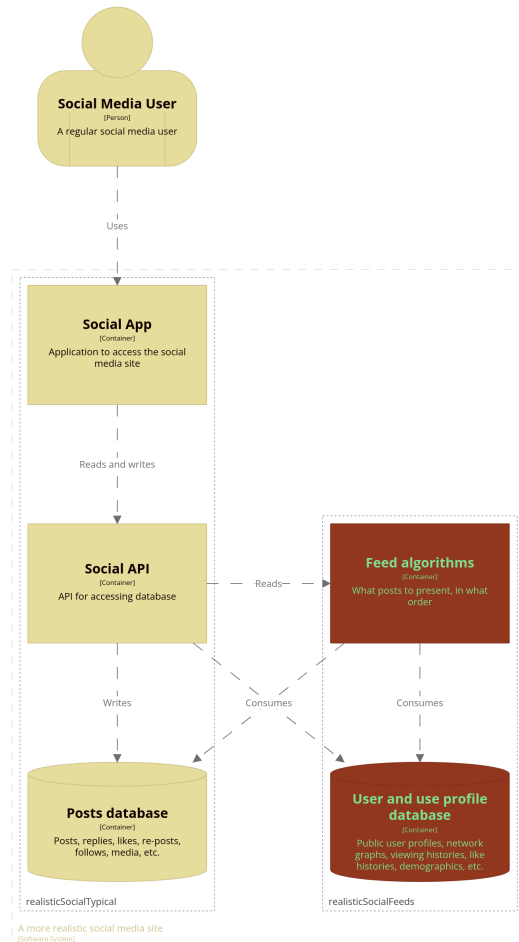
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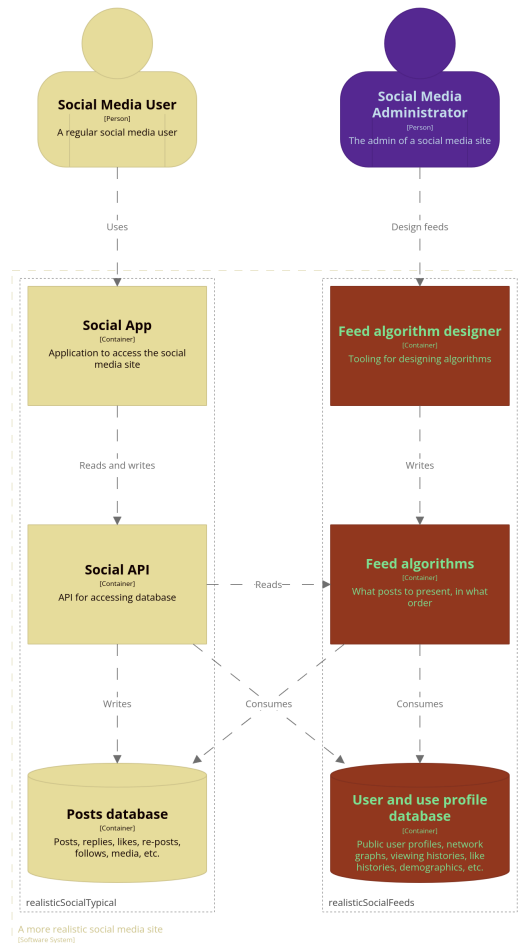
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- The API also captures data for building profiles of users for targeting purposes

MORE REALISTIC VIEW 2/4 – BASIC SERVICES



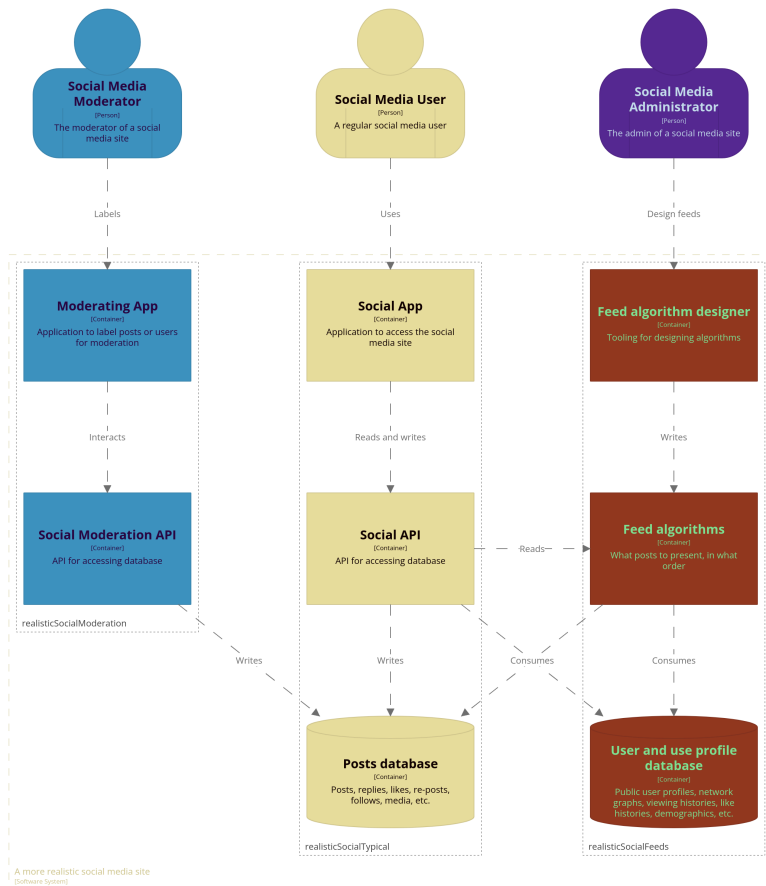
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- The algorithmic feed generator guides the API on what posts to place into the app's feed

MORE REALISTIC VIEW 3/4 – THE ALGORITHM



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- Algorithmic feeds are created by the service administrator, using an app only *they* have access to

MORE REALISTIC VIEW 4/4 – CONTENT MODERATION

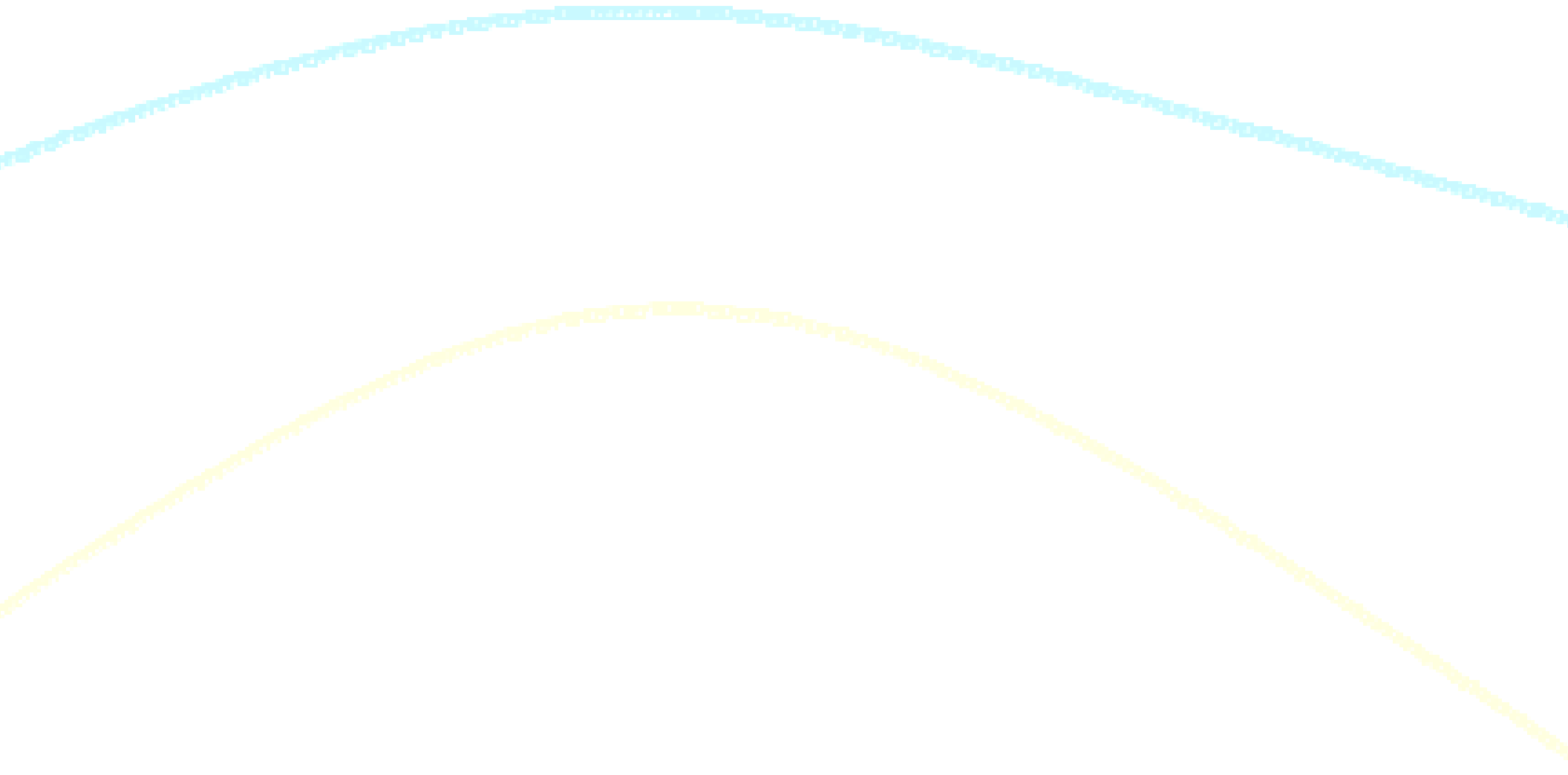


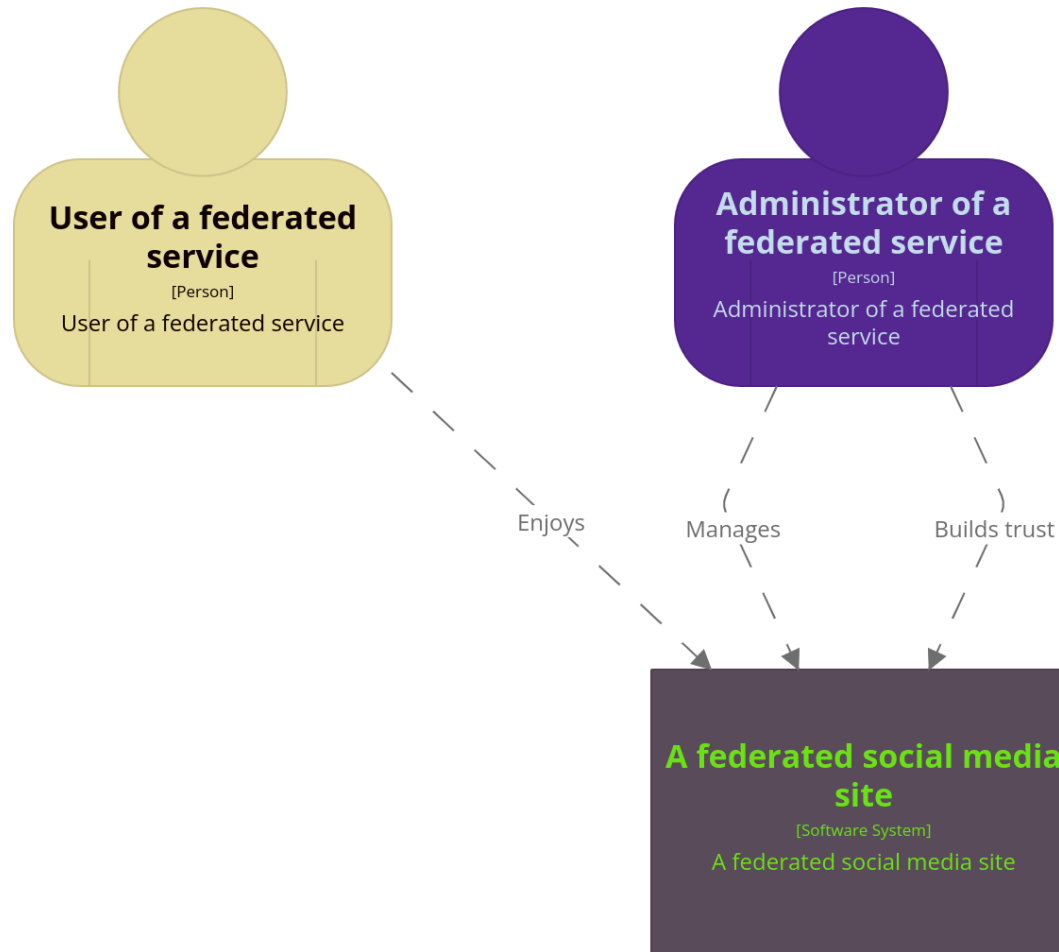
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- Moderation is also performed by a member of the service's staff, using a dedicate app and services the the user doesn't have access to



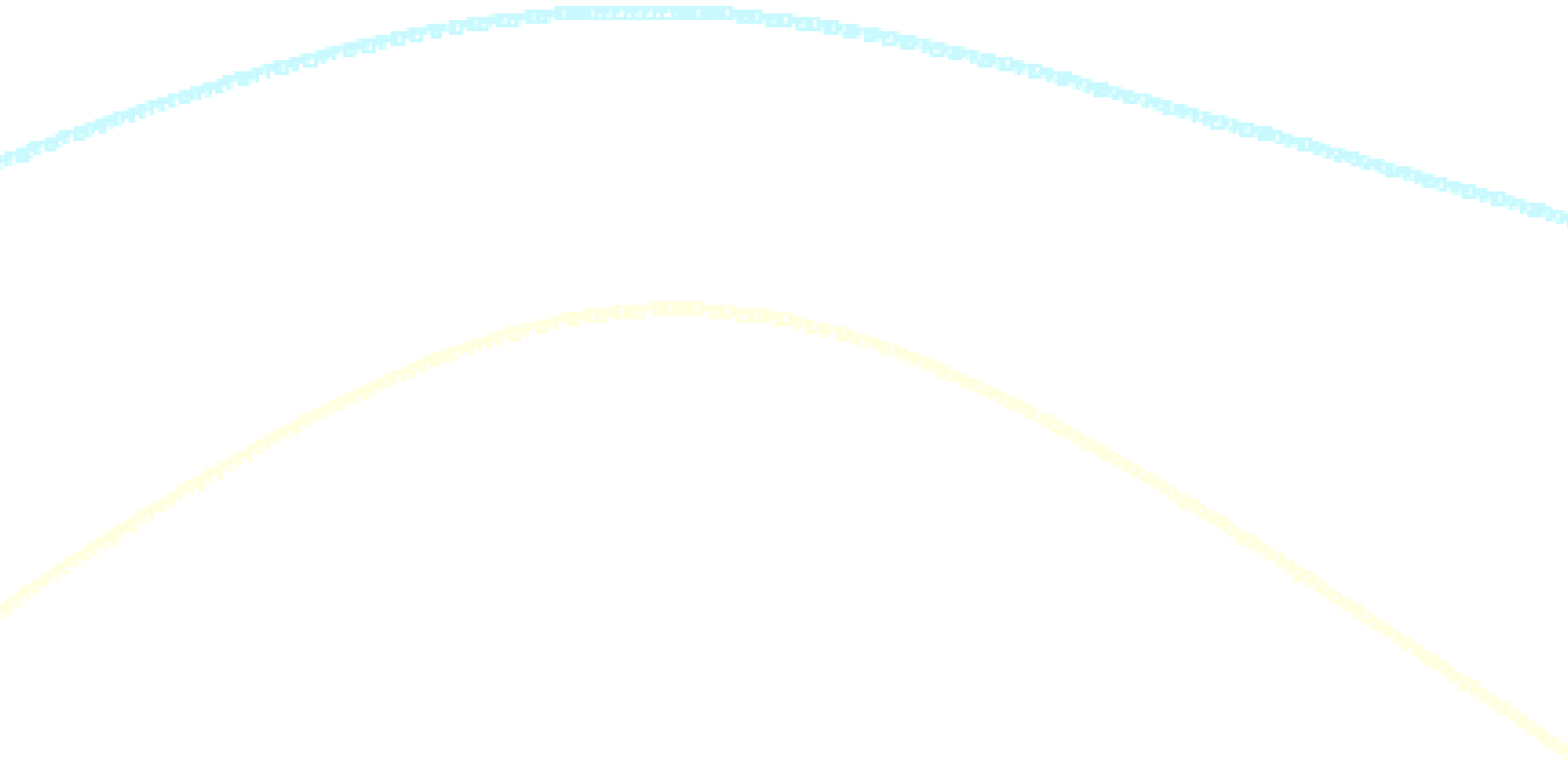
FEDERATED SOCIAL MEDIA SERVICES

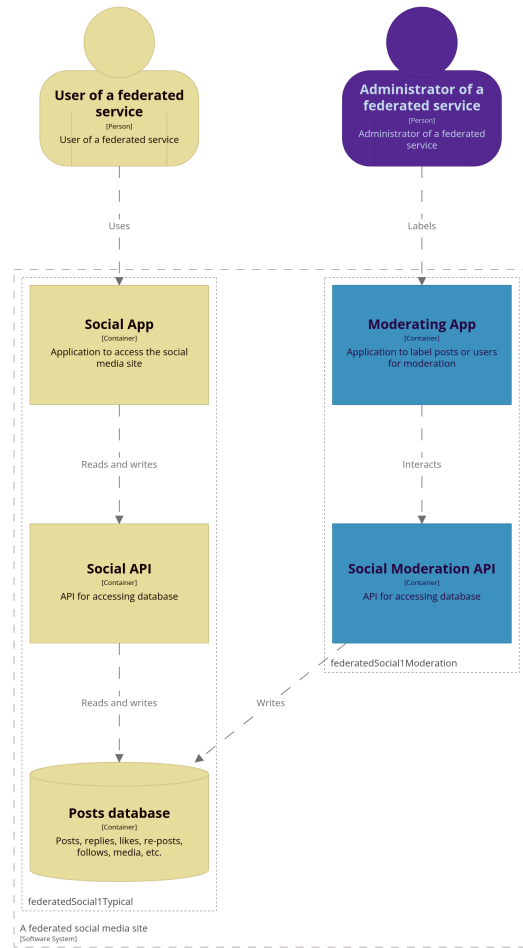
FEDERATED SERVICES 1/8 – OVERVIEW



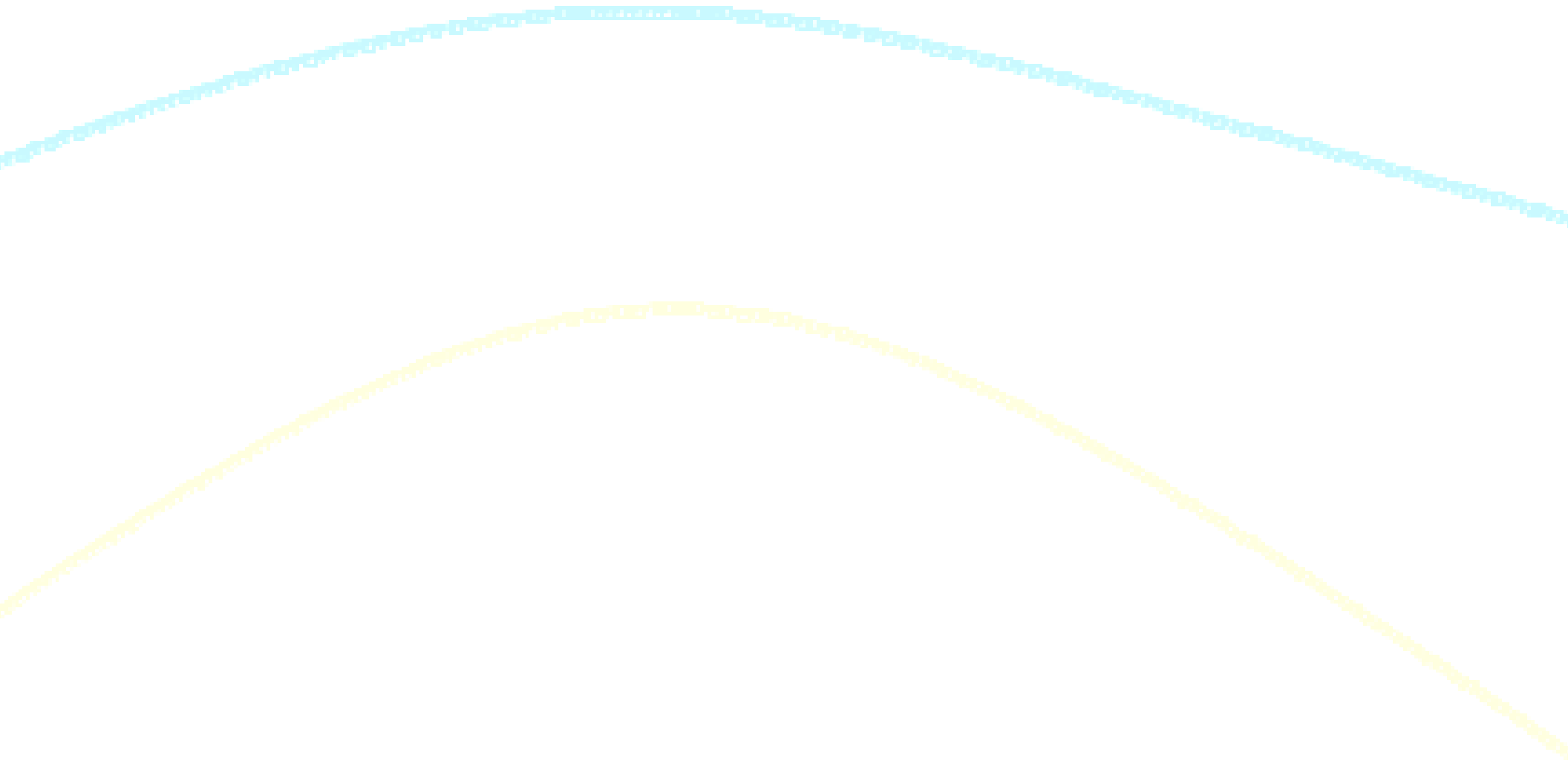


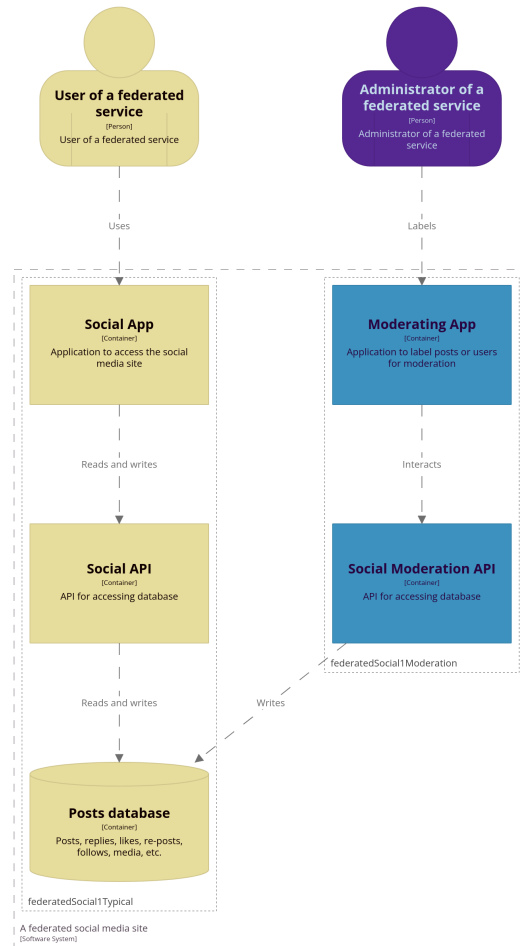
FEDERATED SERVICES 2/8 – INTERNAL, ADMINISTRATION AND CONTENT MODERATION SERVICES





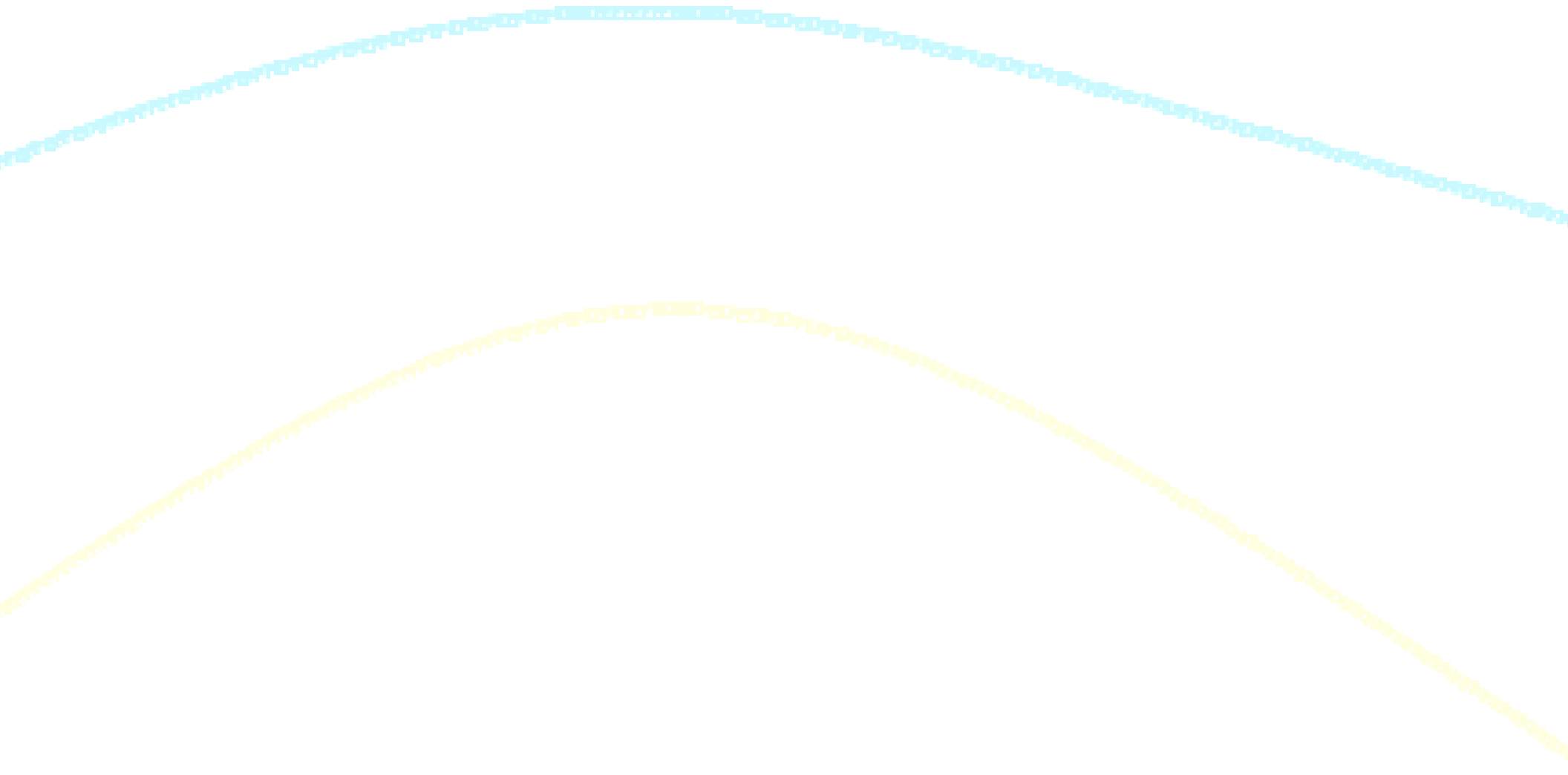
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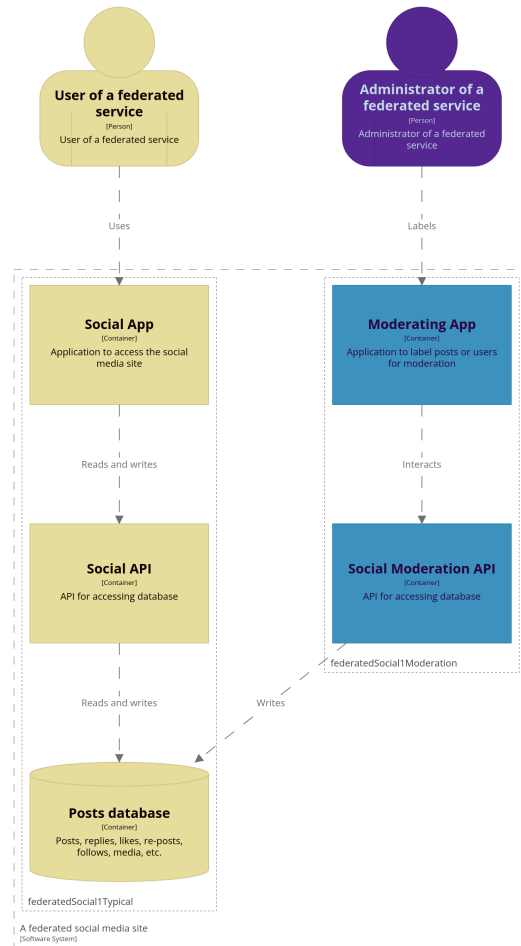




- Same as before, the user access the service through an App that uses an API

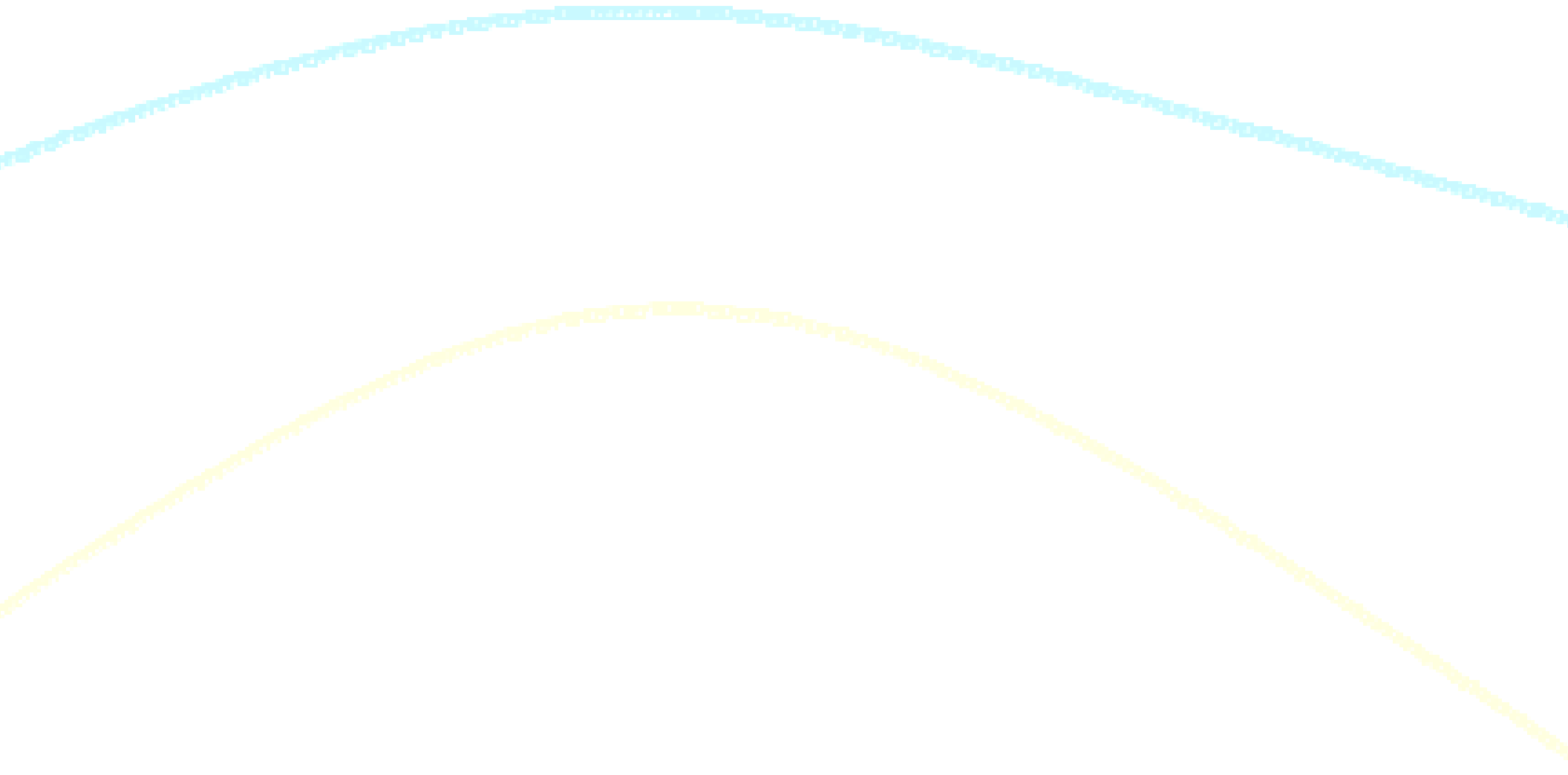
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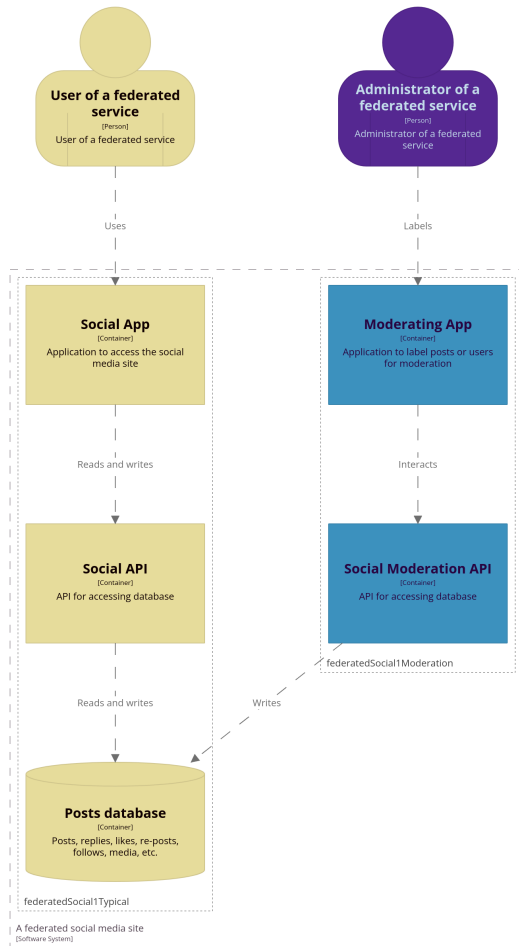




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- As federated services are small, the administrator and the moderator are the one person

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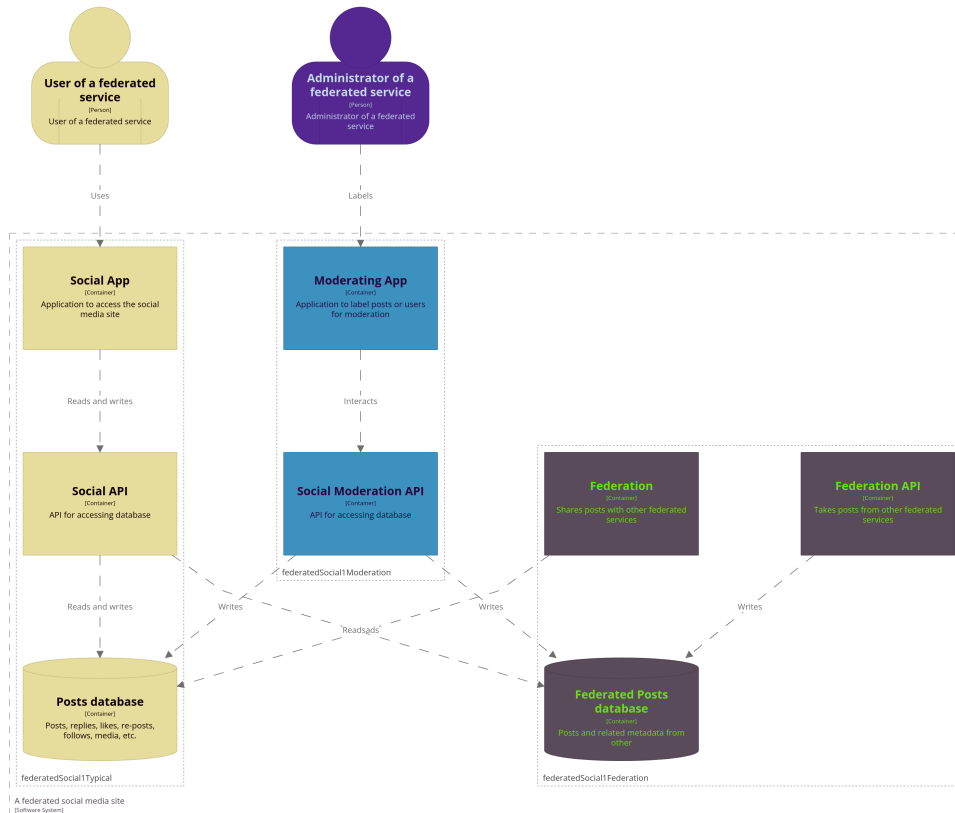




- Same as before, the user access the service through an App that uses an API
- As federated services are small, the administrator and the moderator are the one person
- No algorithmic feeds, though
 - not popular in the fediverse community
 - difficult to implement in a federated environment.

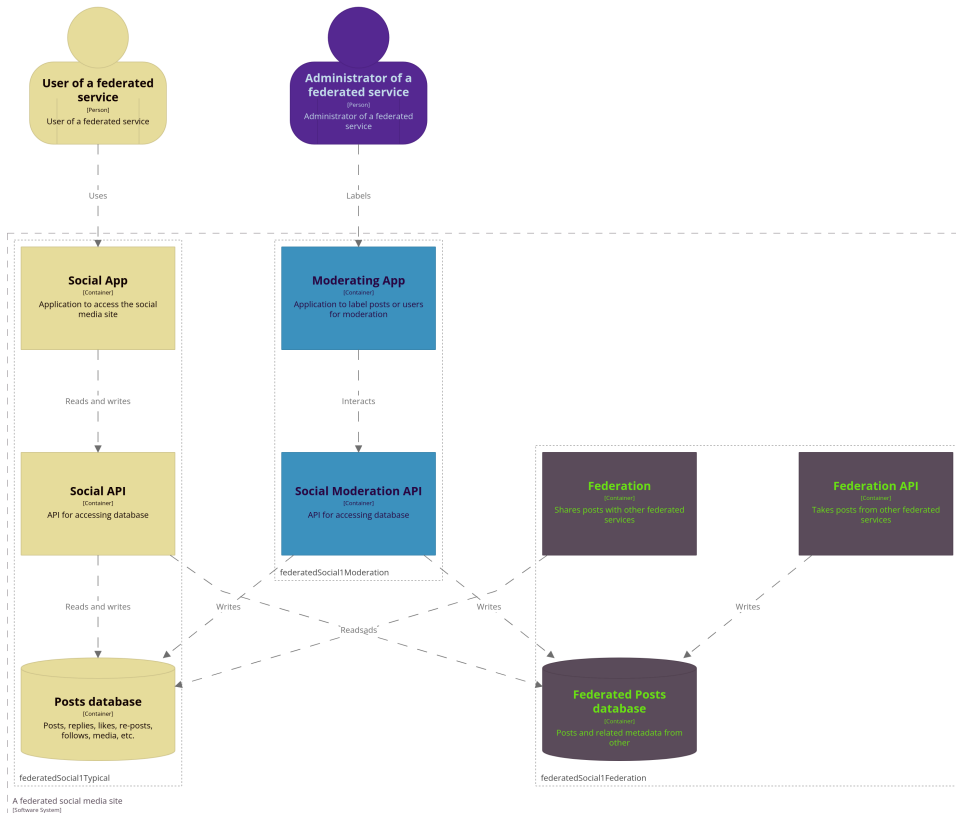
FEDERATED SERVICES 3/8 – FEDERATION 1

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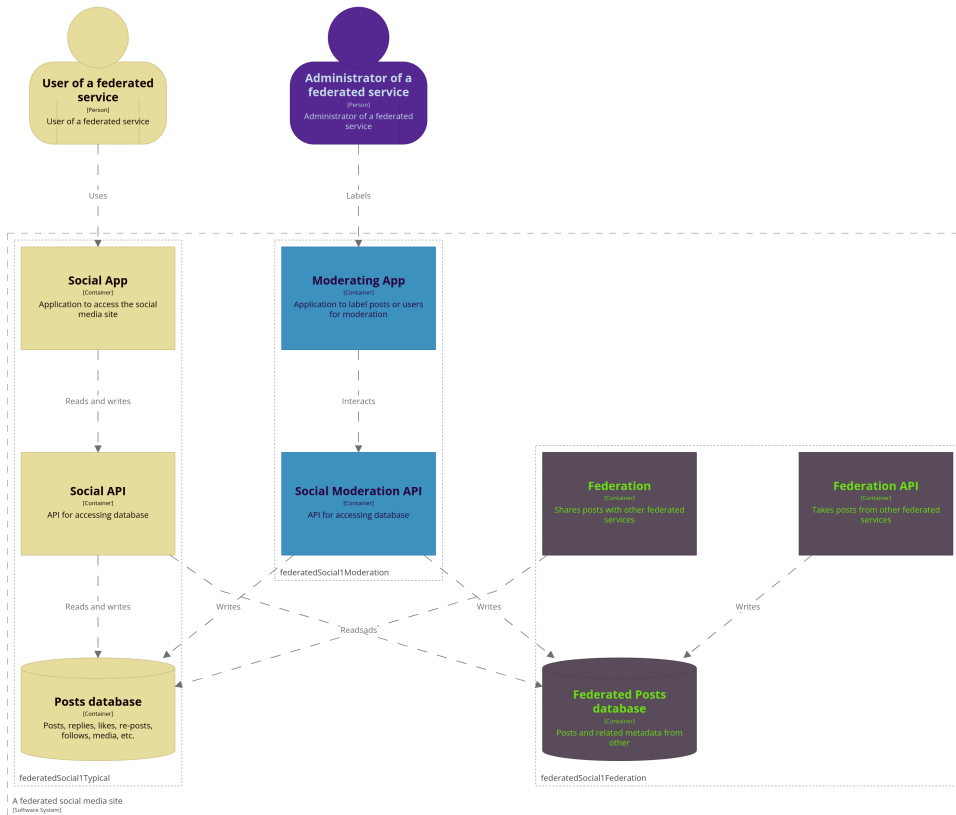


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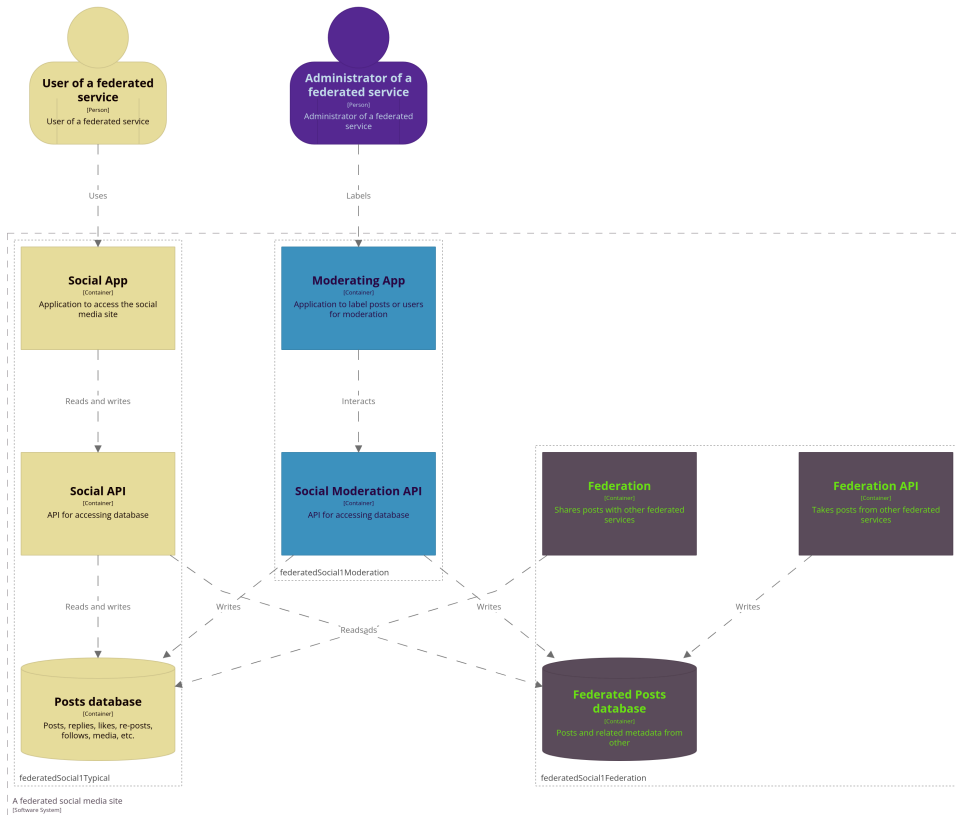


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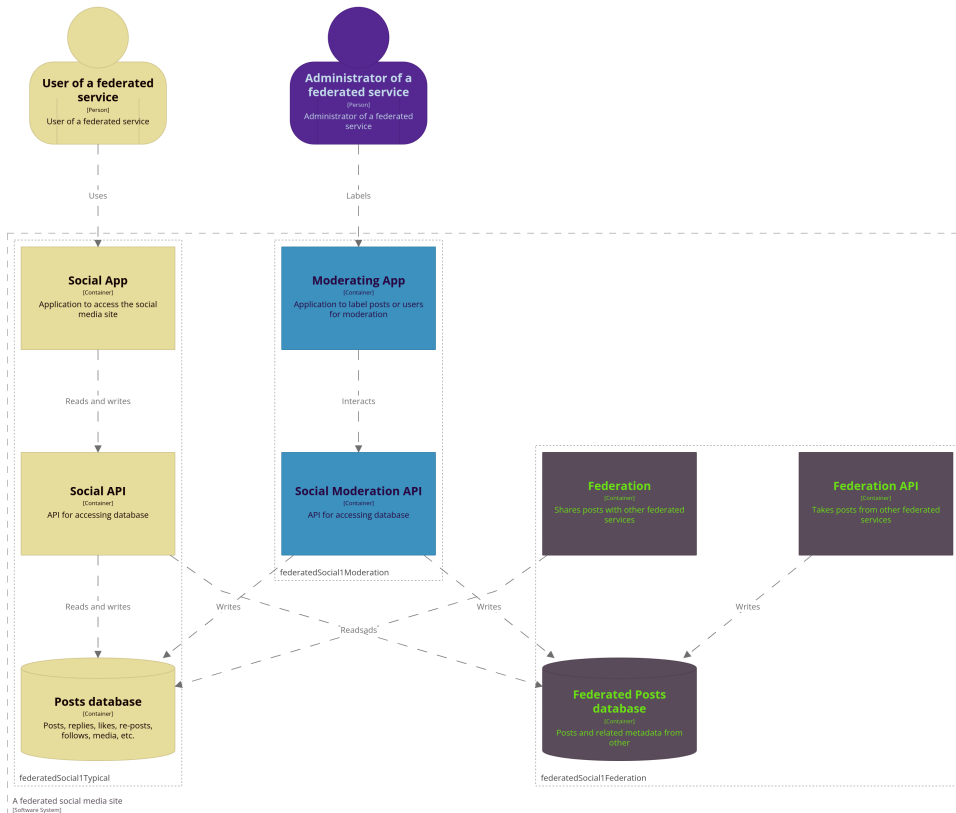
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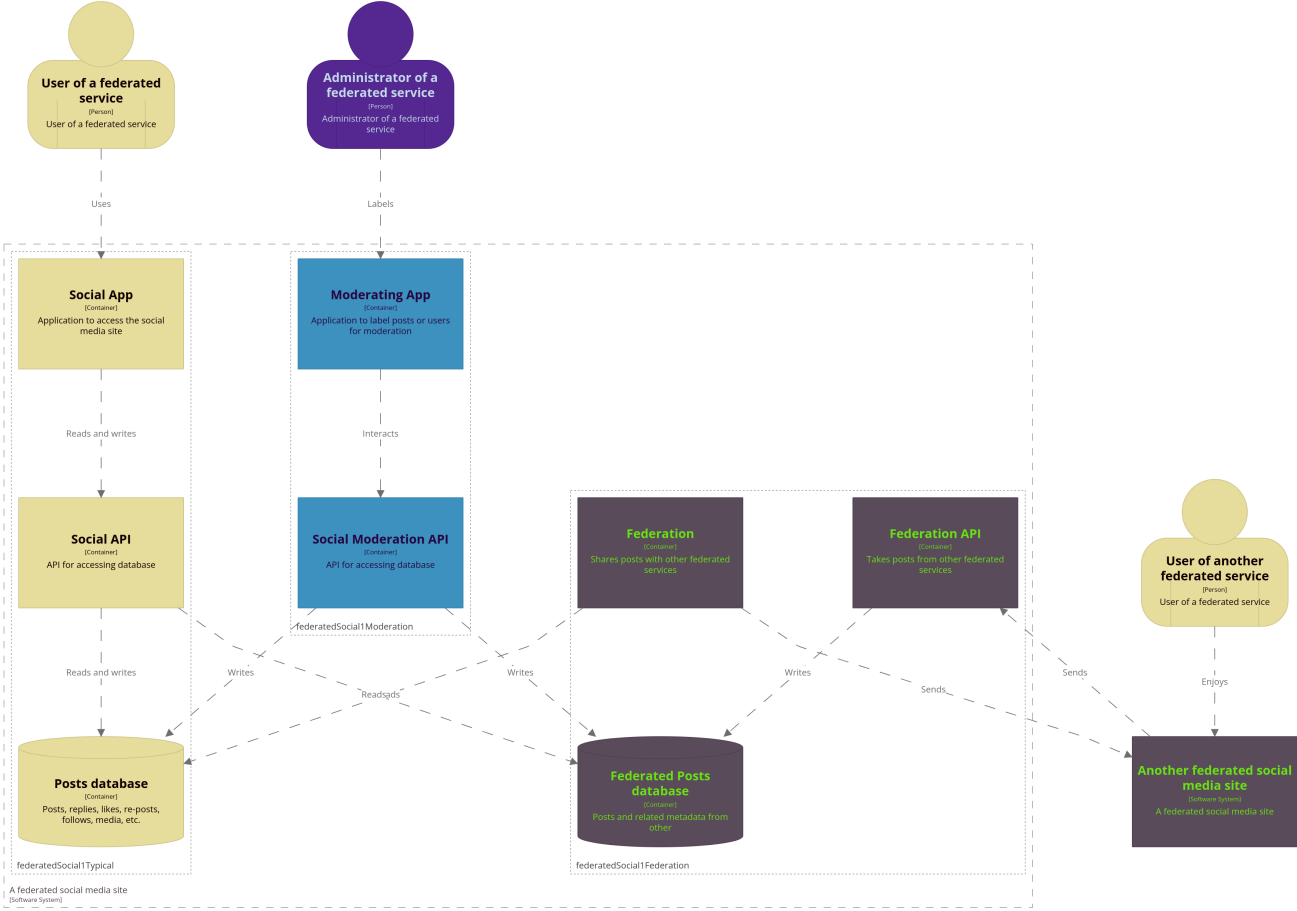
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- A logical database of inbound federated posts

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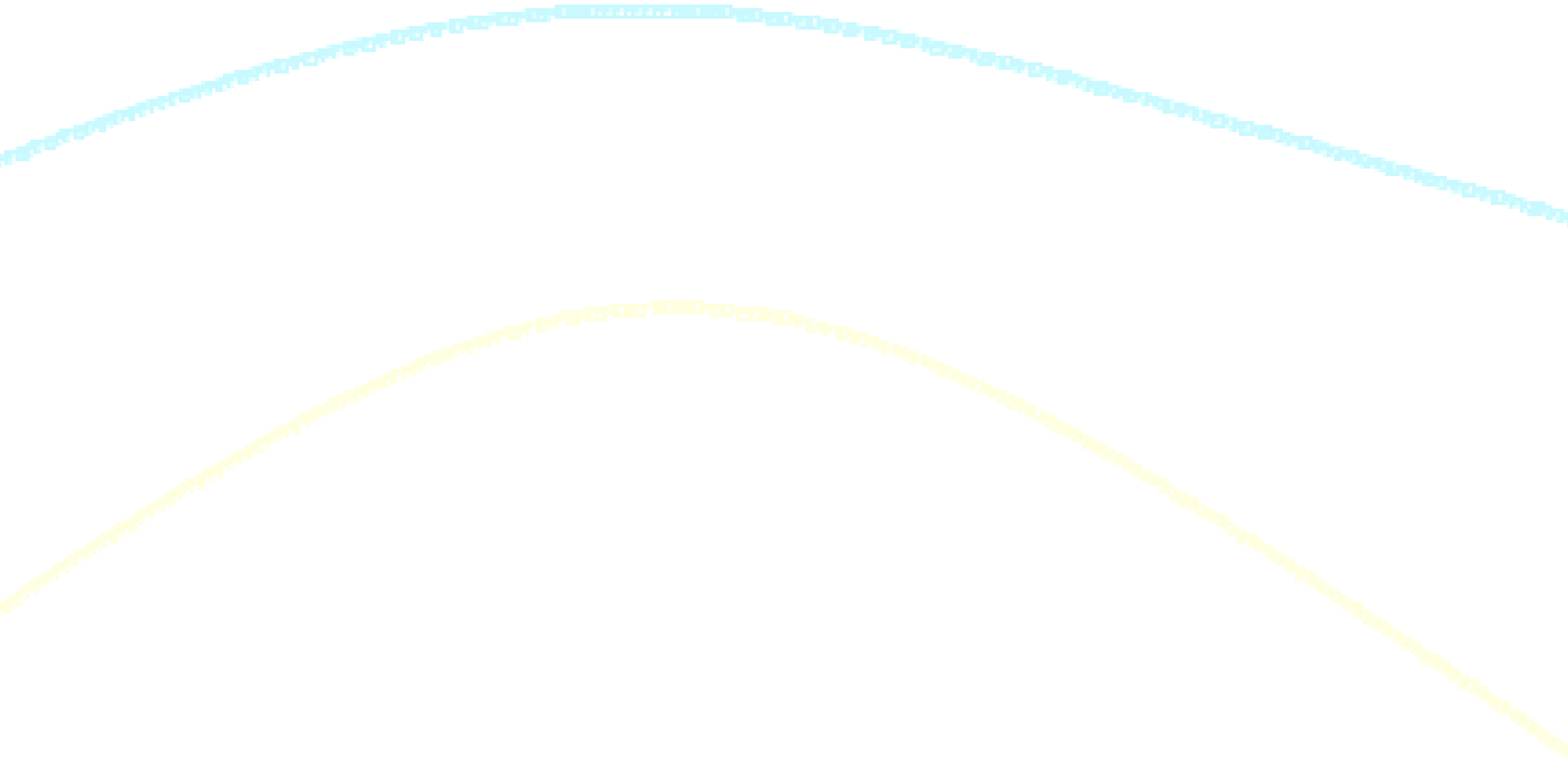


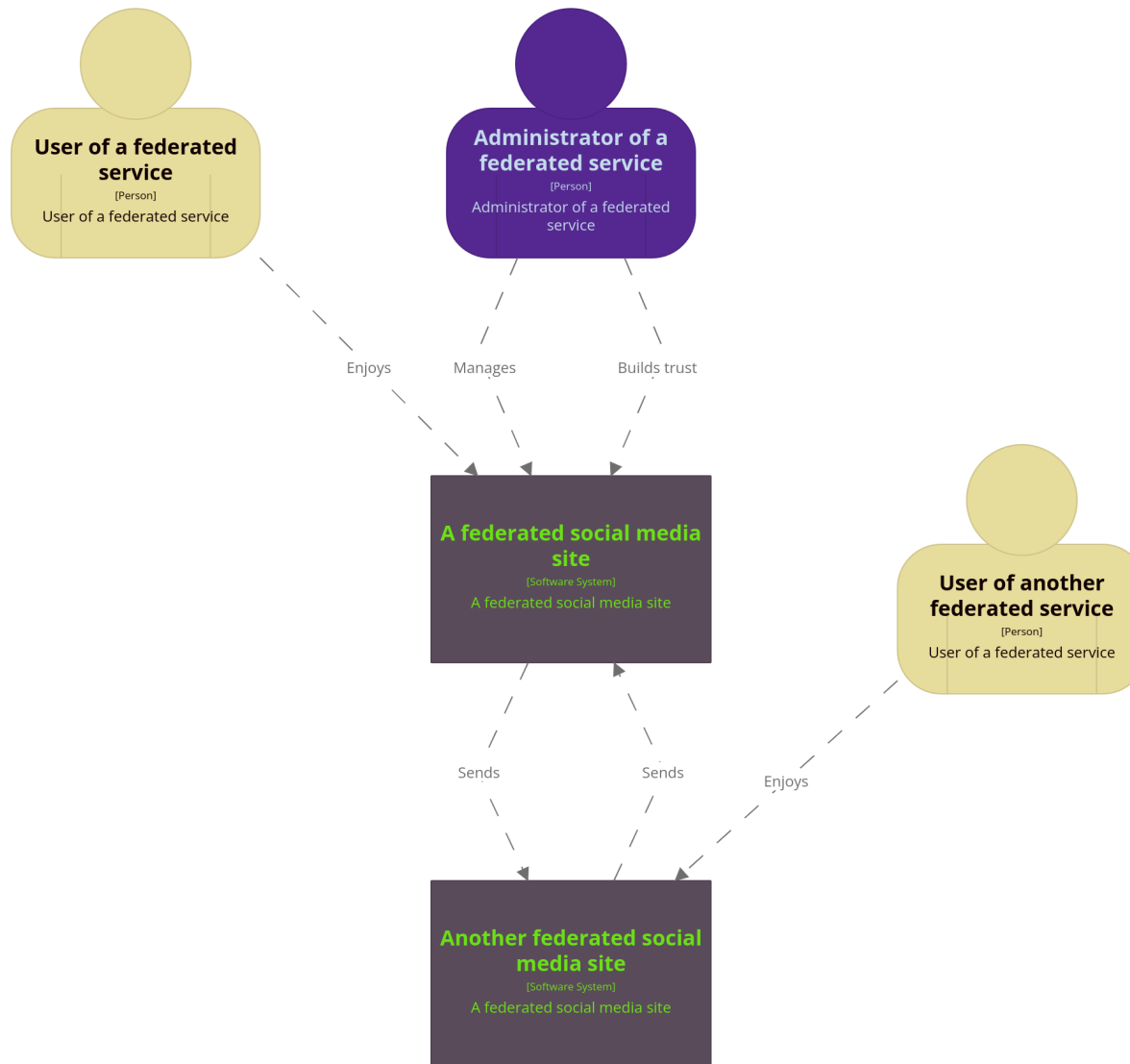
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- Federation API to take in activity from other nodes
- A logical database of inbound federated posts
- Federation using ActivityPub standard

FEDERATED SERVICES 4/8 – FEDERATION 2

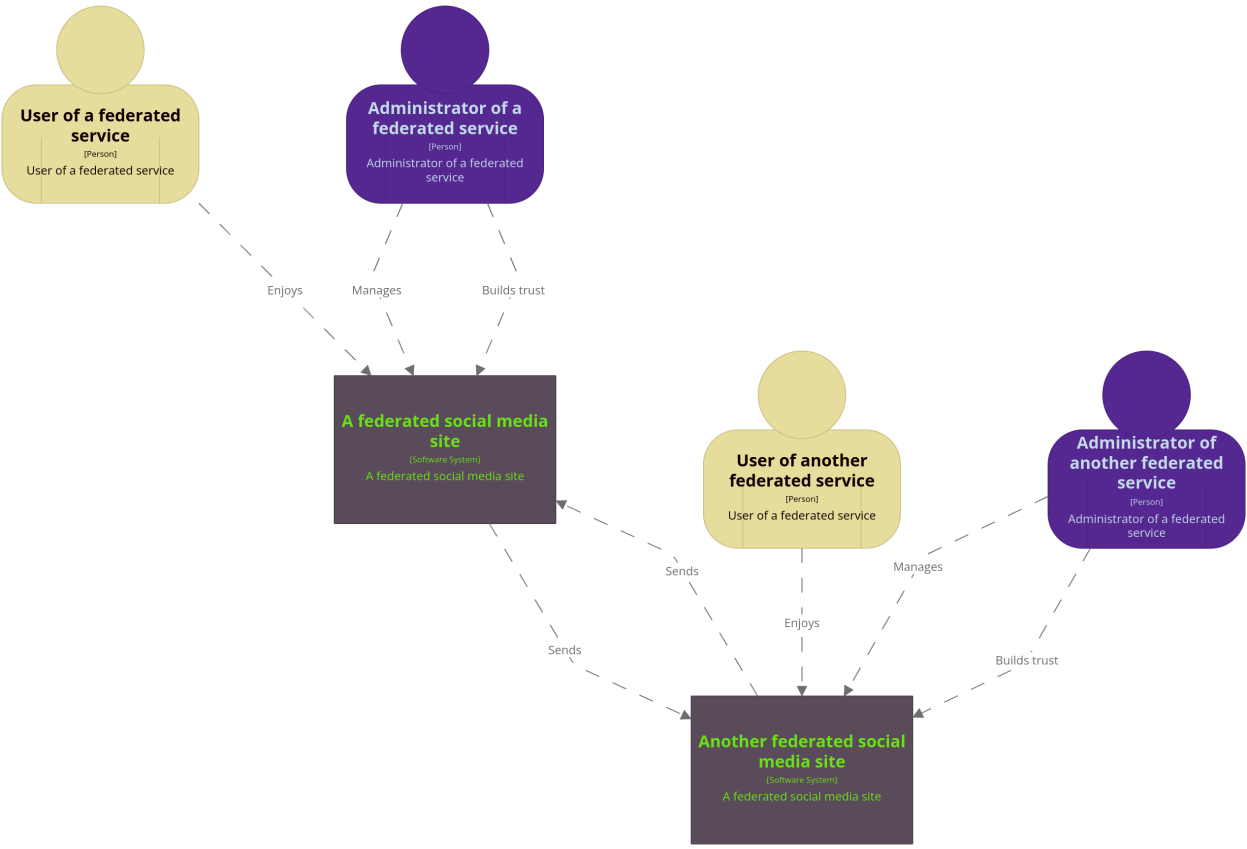


FEDERATED SERVICES 5/8 – FEDERATION 3

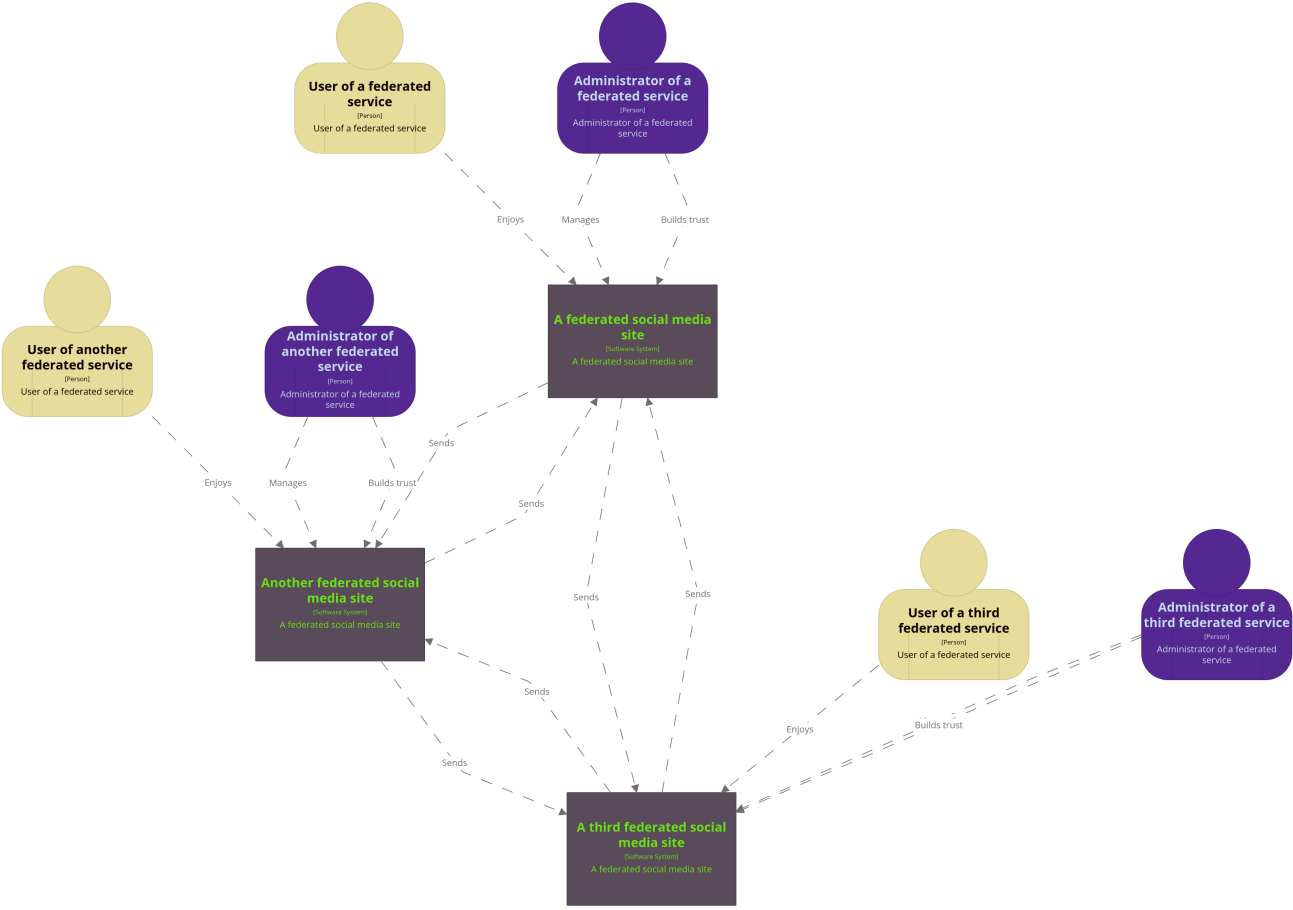




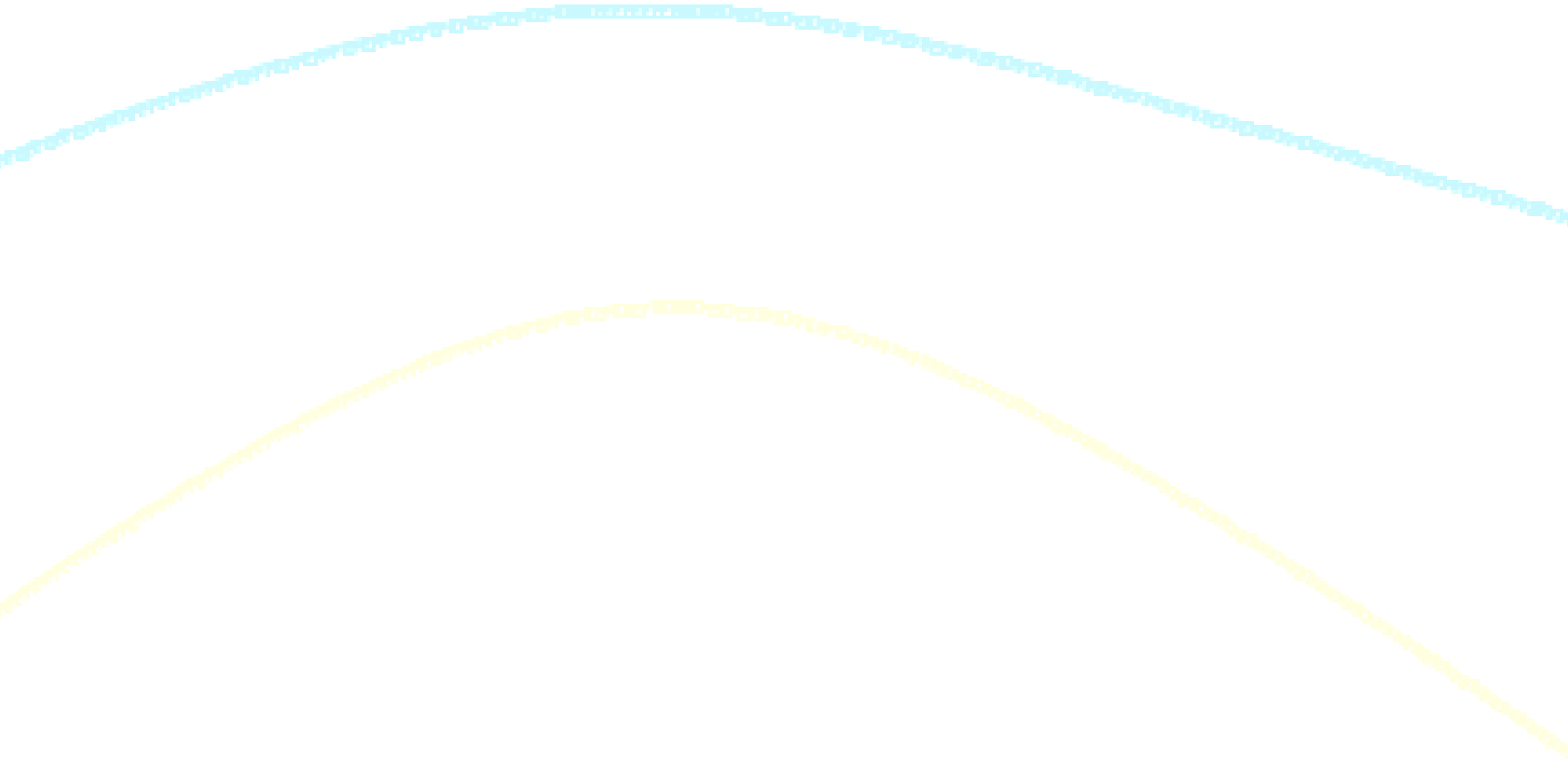
FEDERATED SERVICES 6/8 – FEDERATION 4

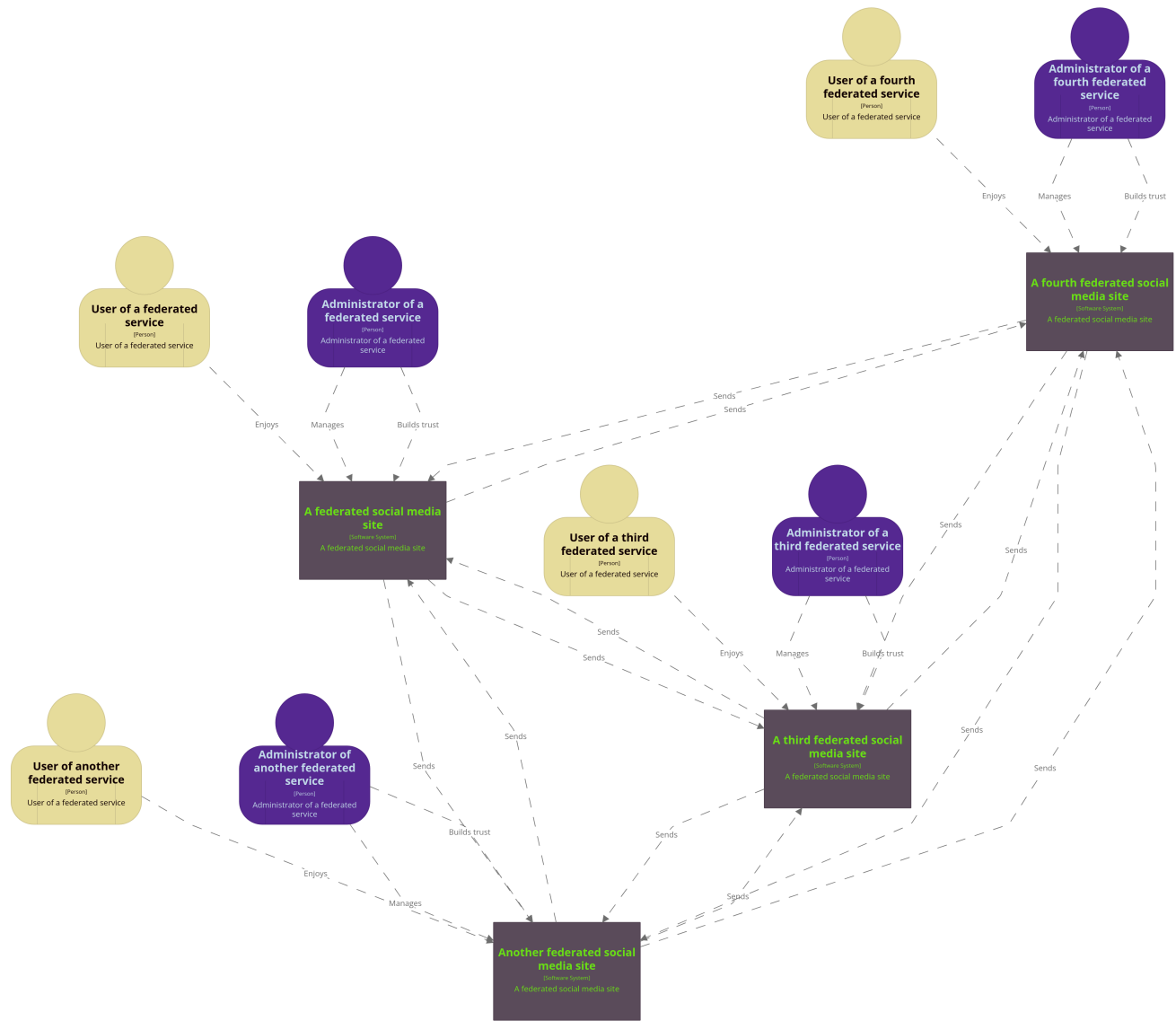


FEDERATED SERVICES 7/8 – FEDERATION 5



FEDERATED SERVICES 8/8 – FEDERATION 6

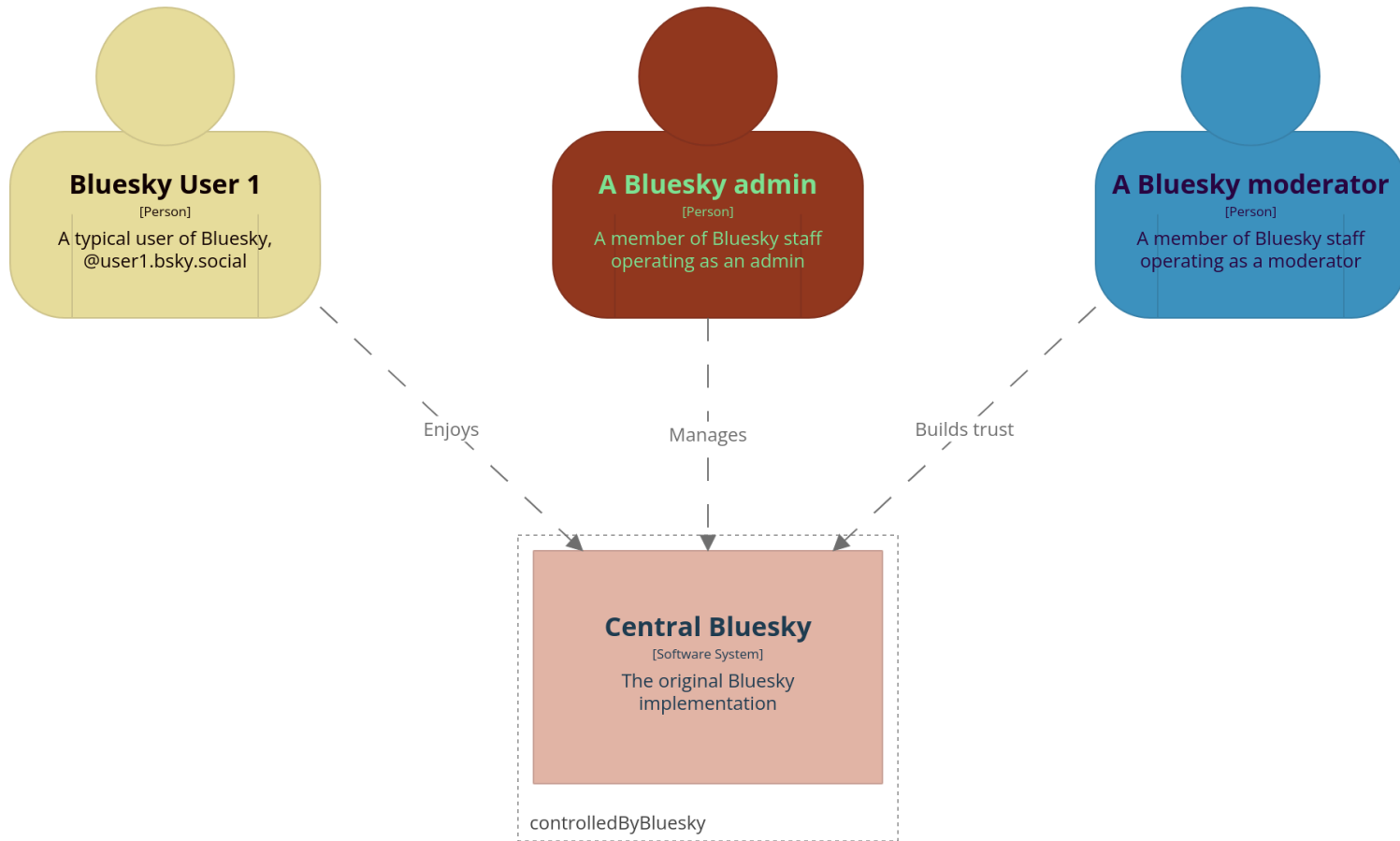


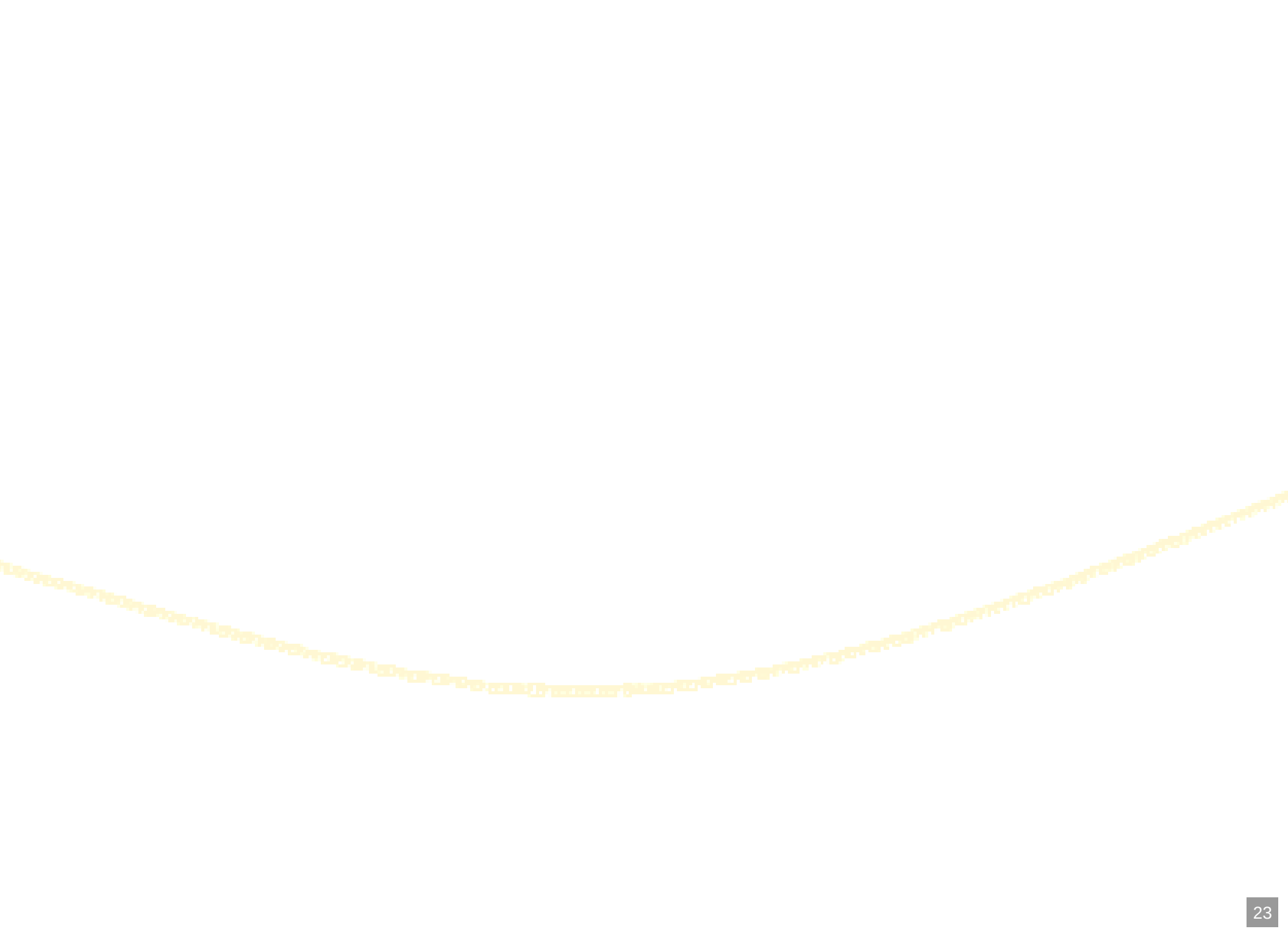




BLUESKY

BASIC BLUESKY 1/2





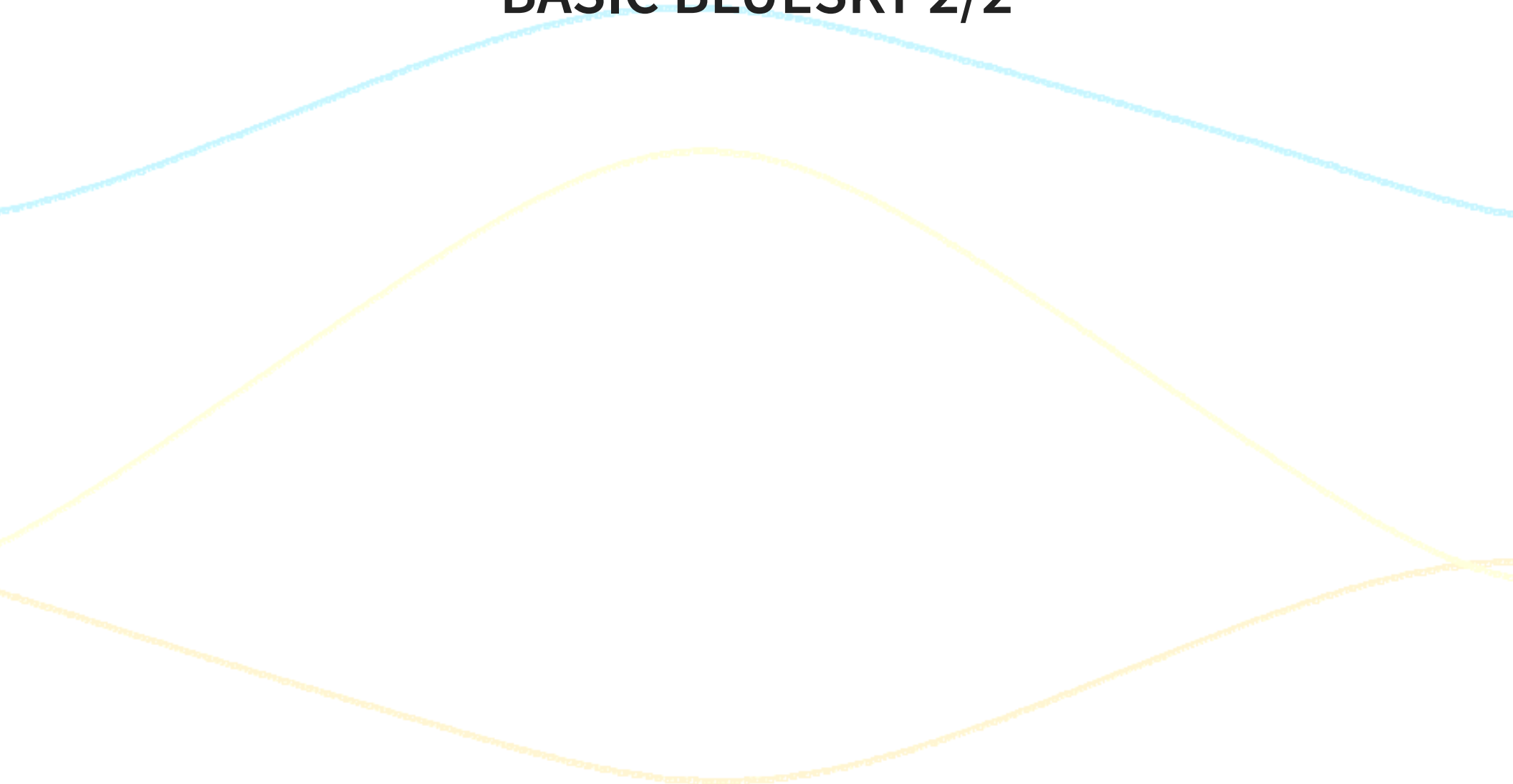
BASIC BLUESKY 2/2



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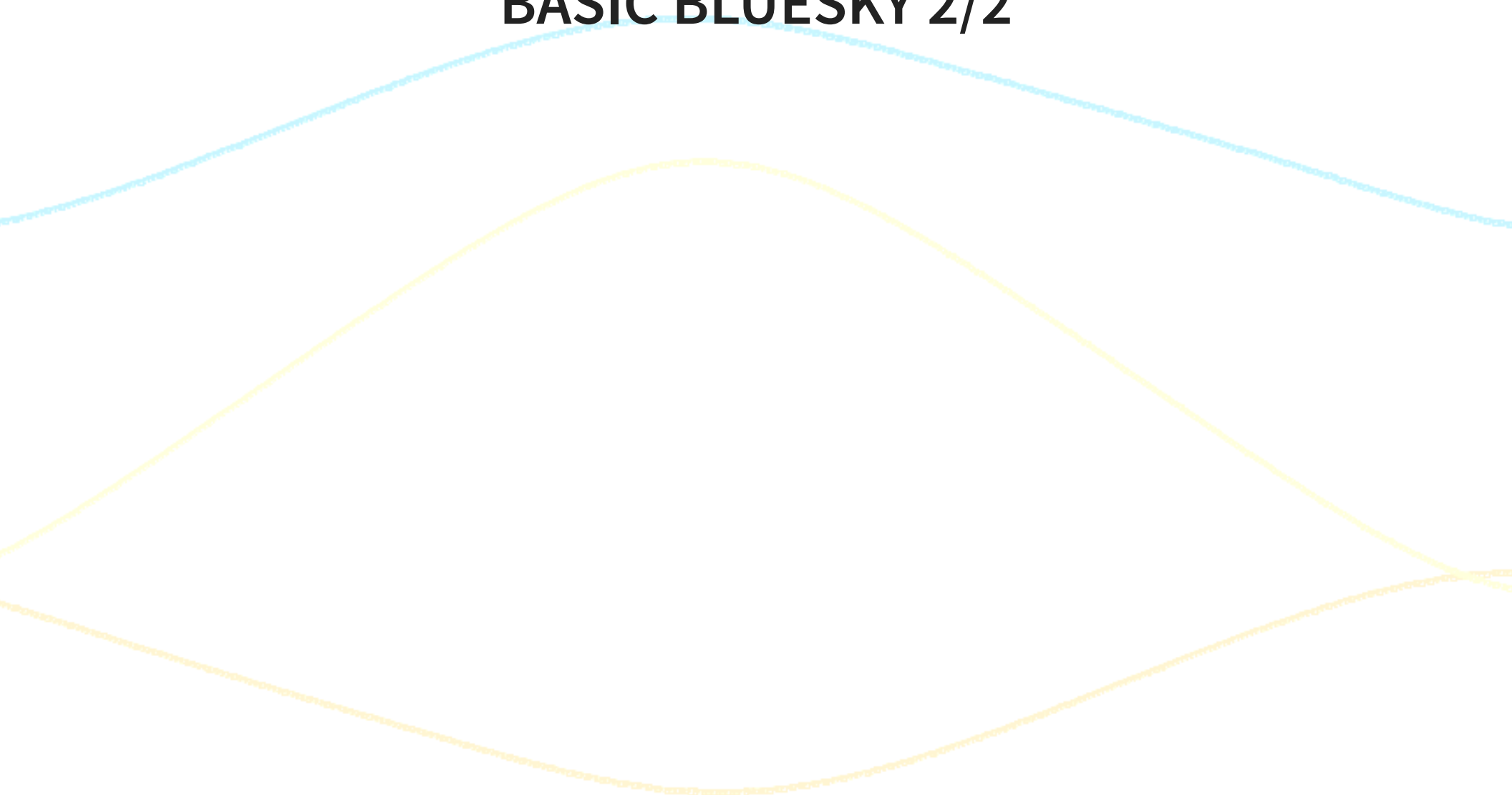
BASIC BLUESKY 2/2



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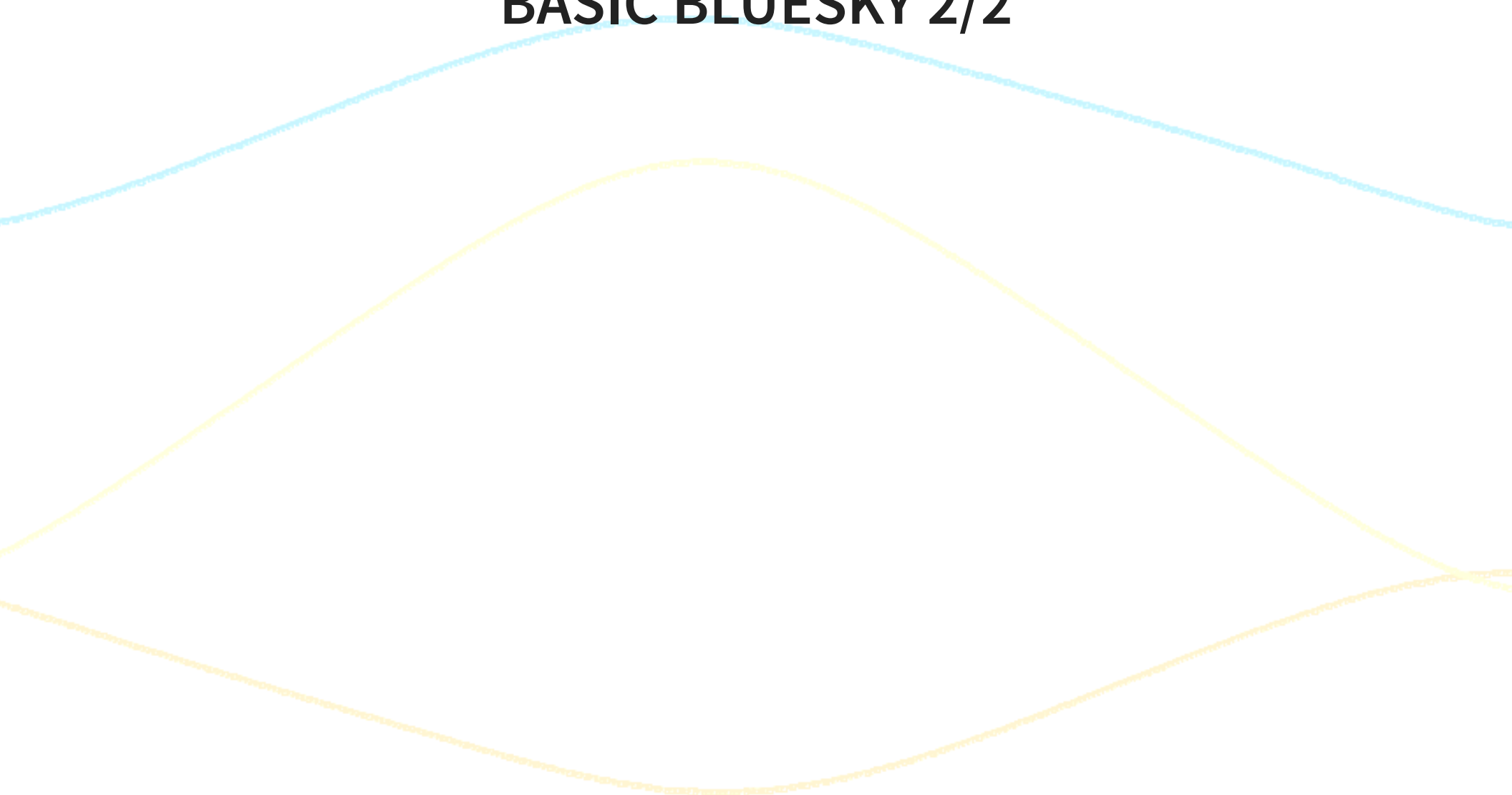
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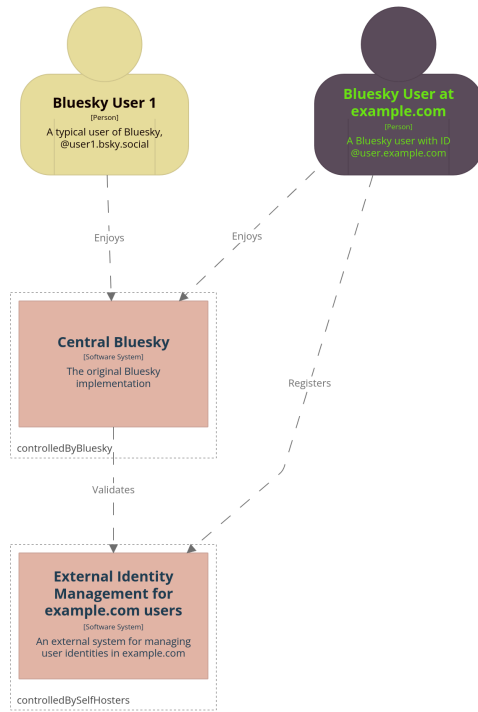
BASIC BLUESKY 2/2





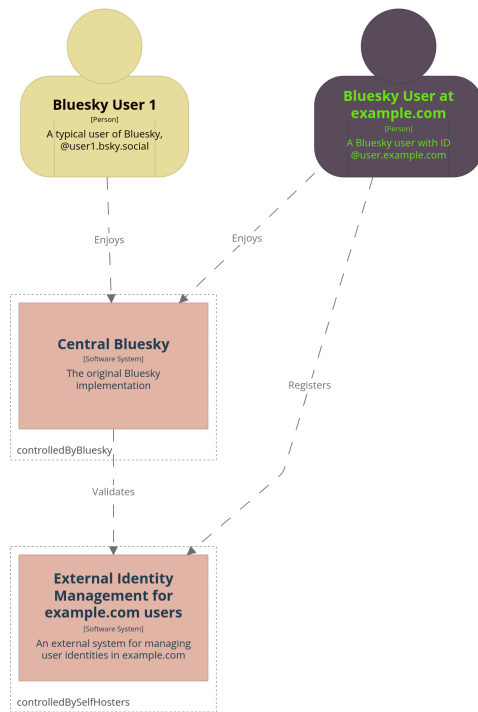
BLUESKY – IDENTITIES

BLUESKY IDENTITIES 1/4



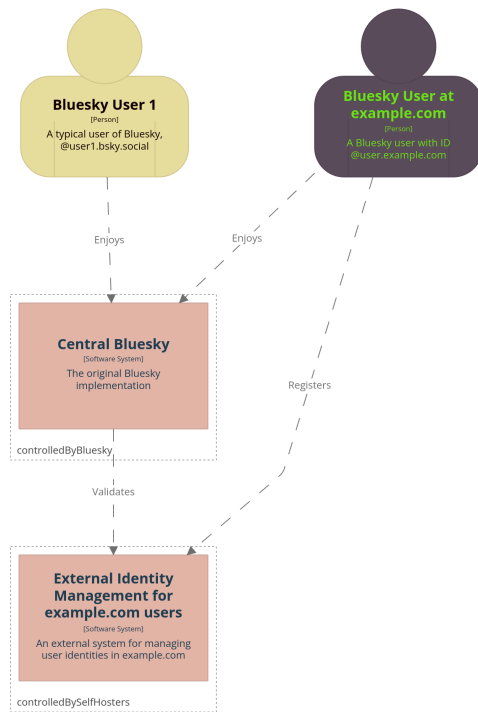
BLUESKY IDENTITIES 1/4

- User's typical Bluesky ID is `@<user-handle>.bsky.social`
 - e.g. `@theauldsthretch.bsky.social`



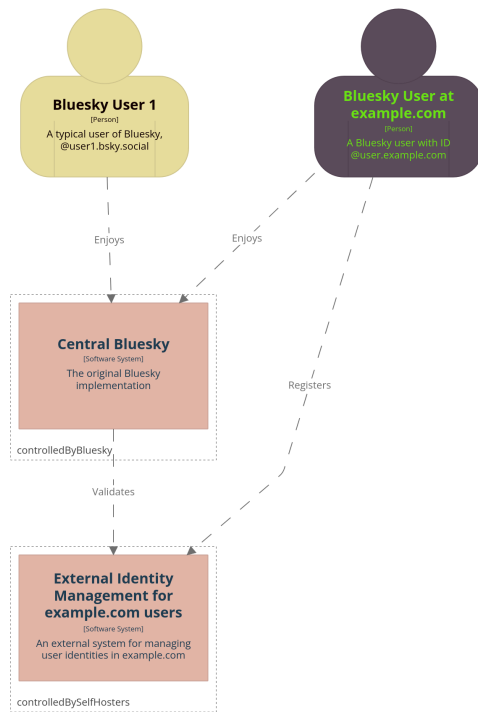
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 - `@eibhear.gibiris.org` – the author
 - `@wyden.senate.gov` – a U.S. Senator



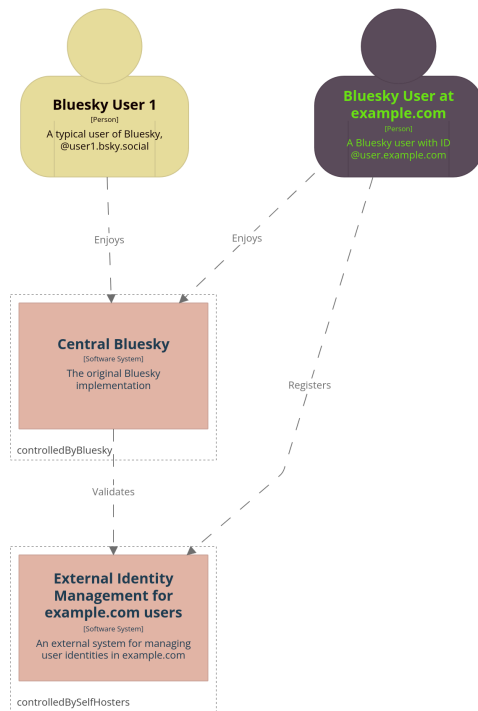
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- Domain-based handle resolves to a DID, either by DNS or `.well-known`



```
$ dig _atproto.eibhear.gibiris.org TXT
```

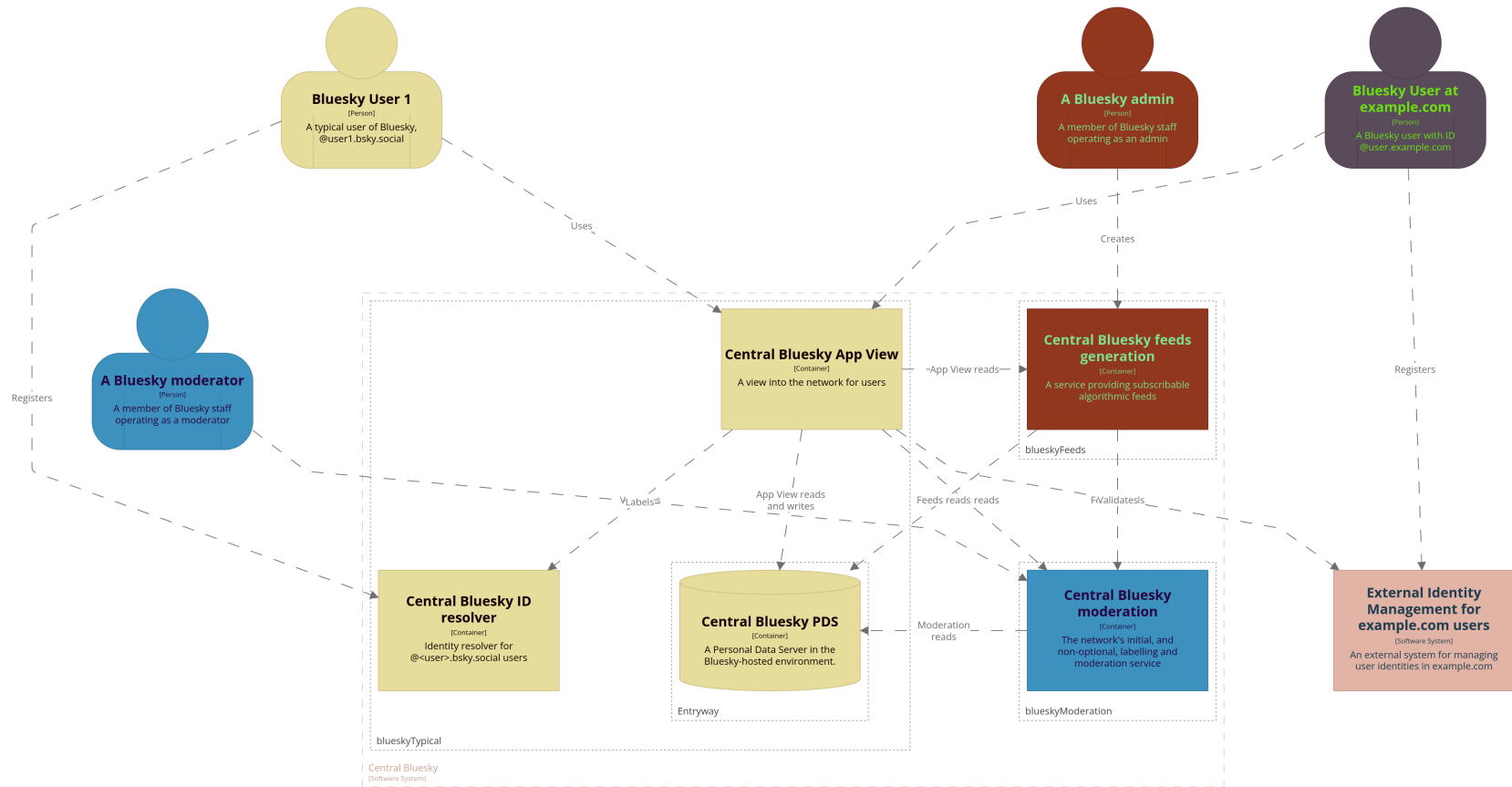
```
...
```

```
;; ANSWER SECTION:
```

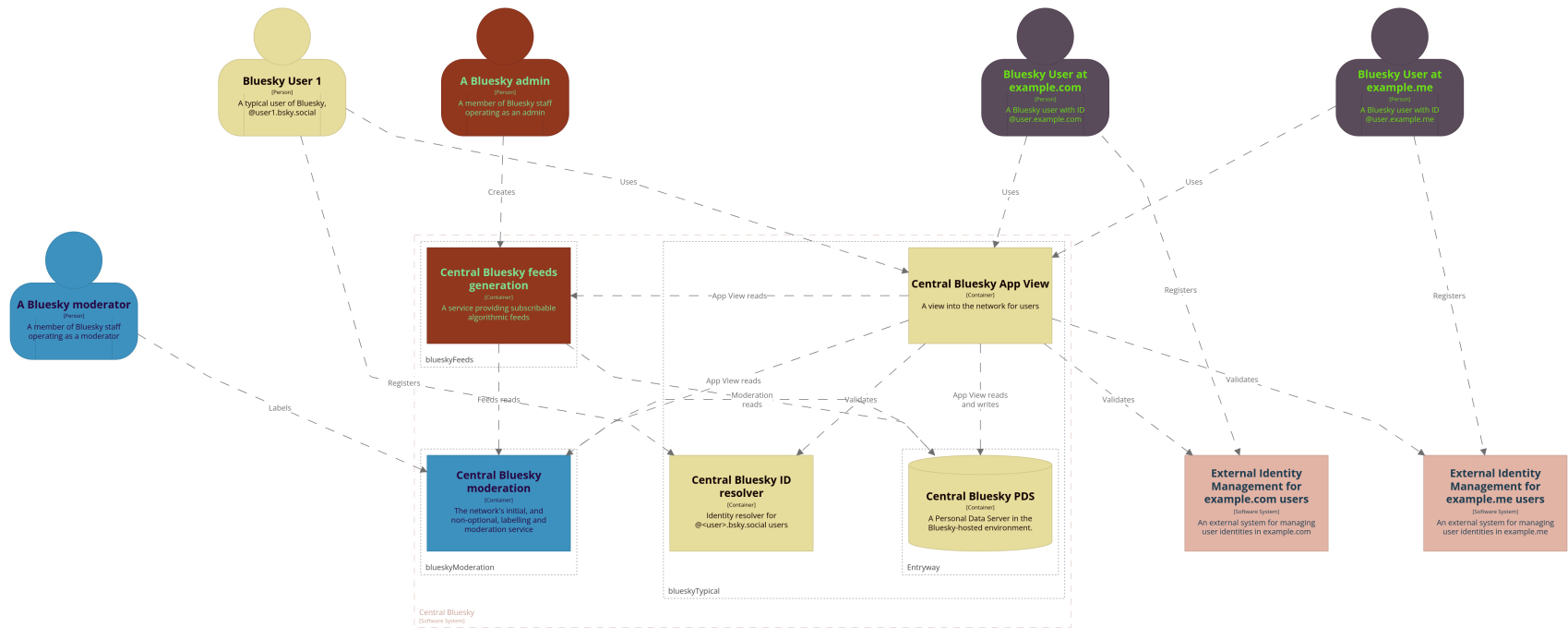
```
_atproto.eibhear.gibiris.org. 3600 IN TXT
```

```
$ curl https://theauldsthretch.bsky.social/.well-known/did:plc:avzdf5esd7xpbgsgh7lx4kzq
```

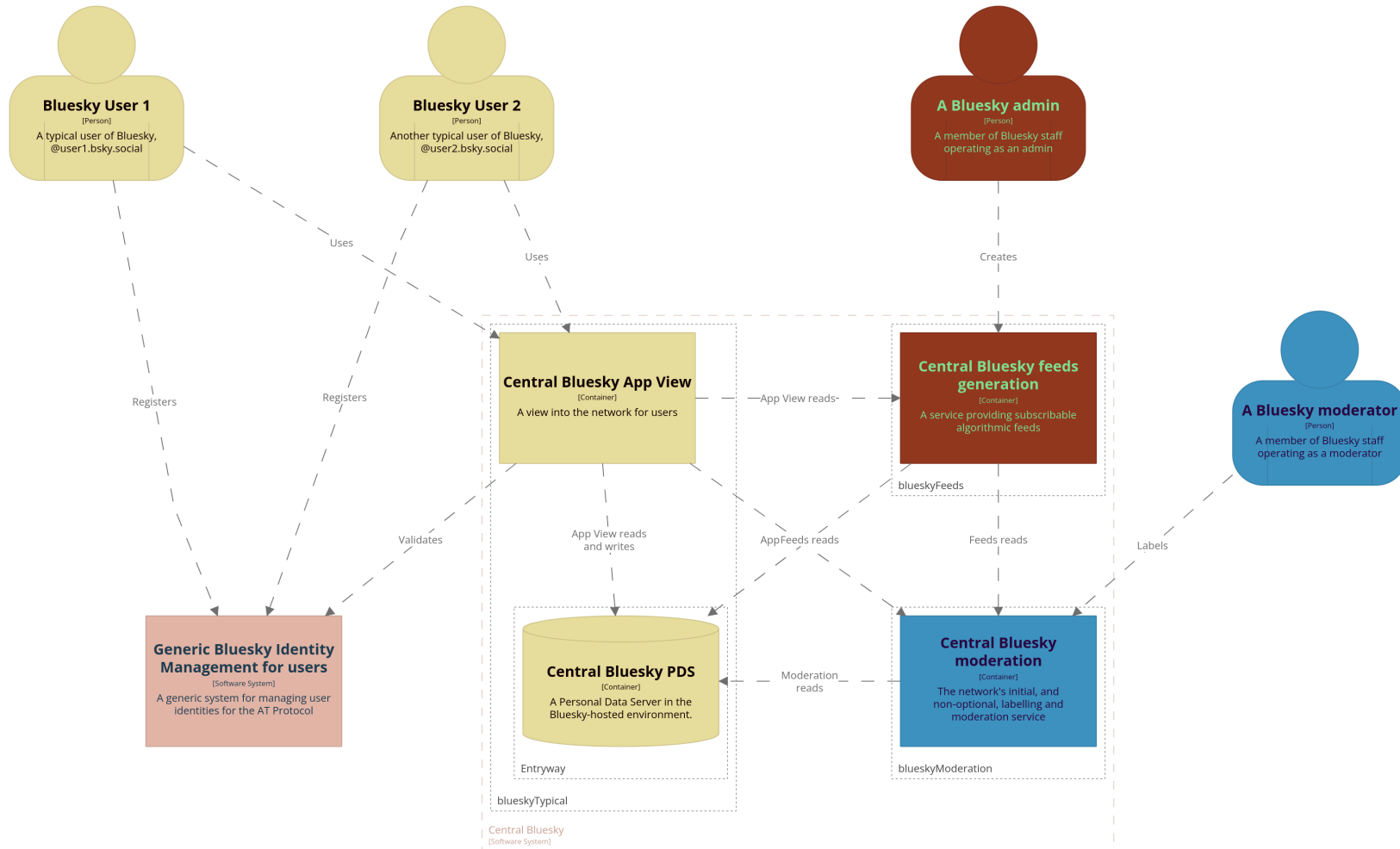
BLUESKY IDENTITIES 2/4

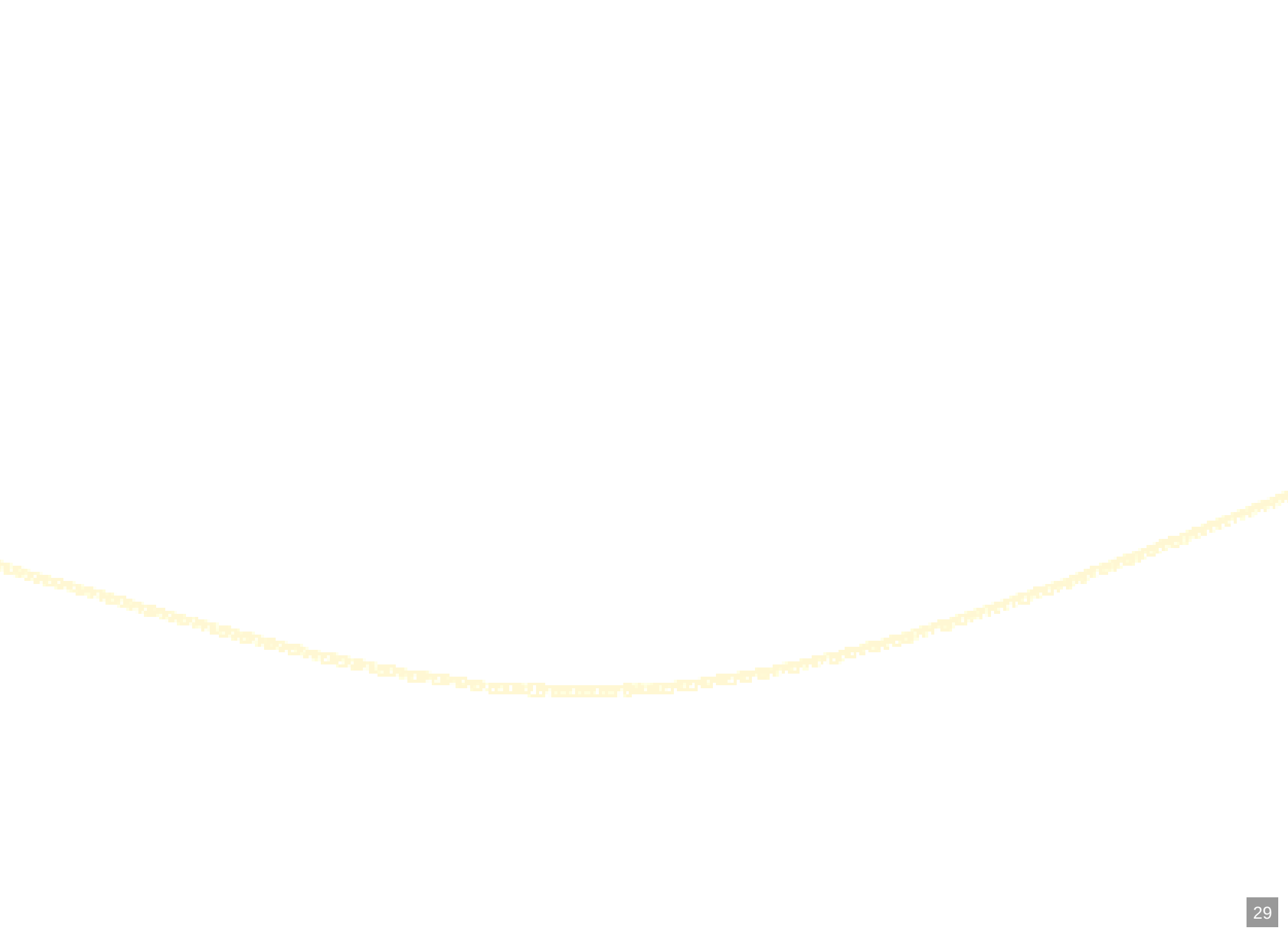


BLUESKY IDENTITIES 3/4



BLUESKY IDENTITIES 4/4







BLUESKY – COMPOSABLE FEEDS

BLUESKY COMPOSABLE FEEDS 1/3



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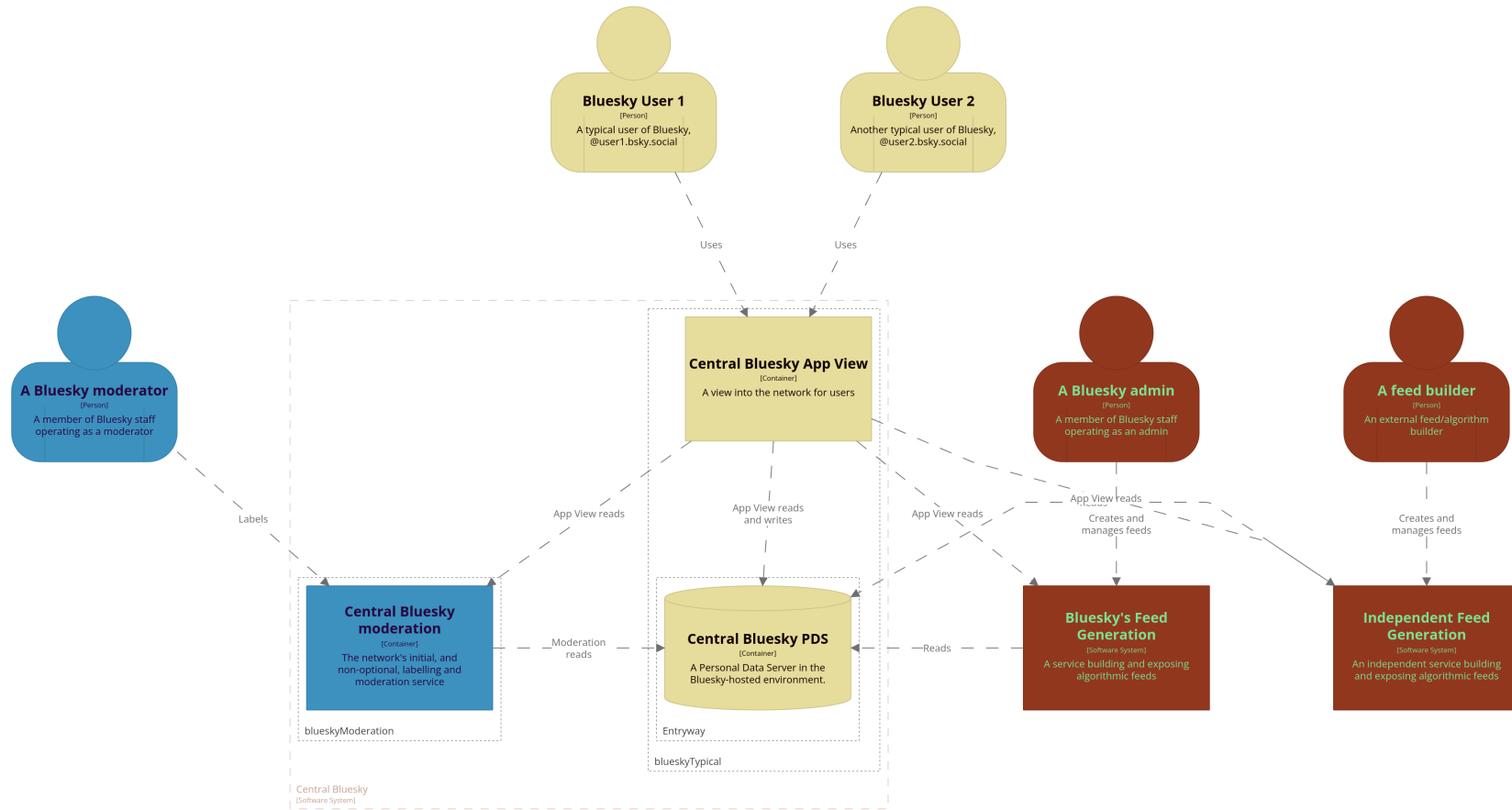
BLUESKY COMPOSABLE FEEDS 1/3



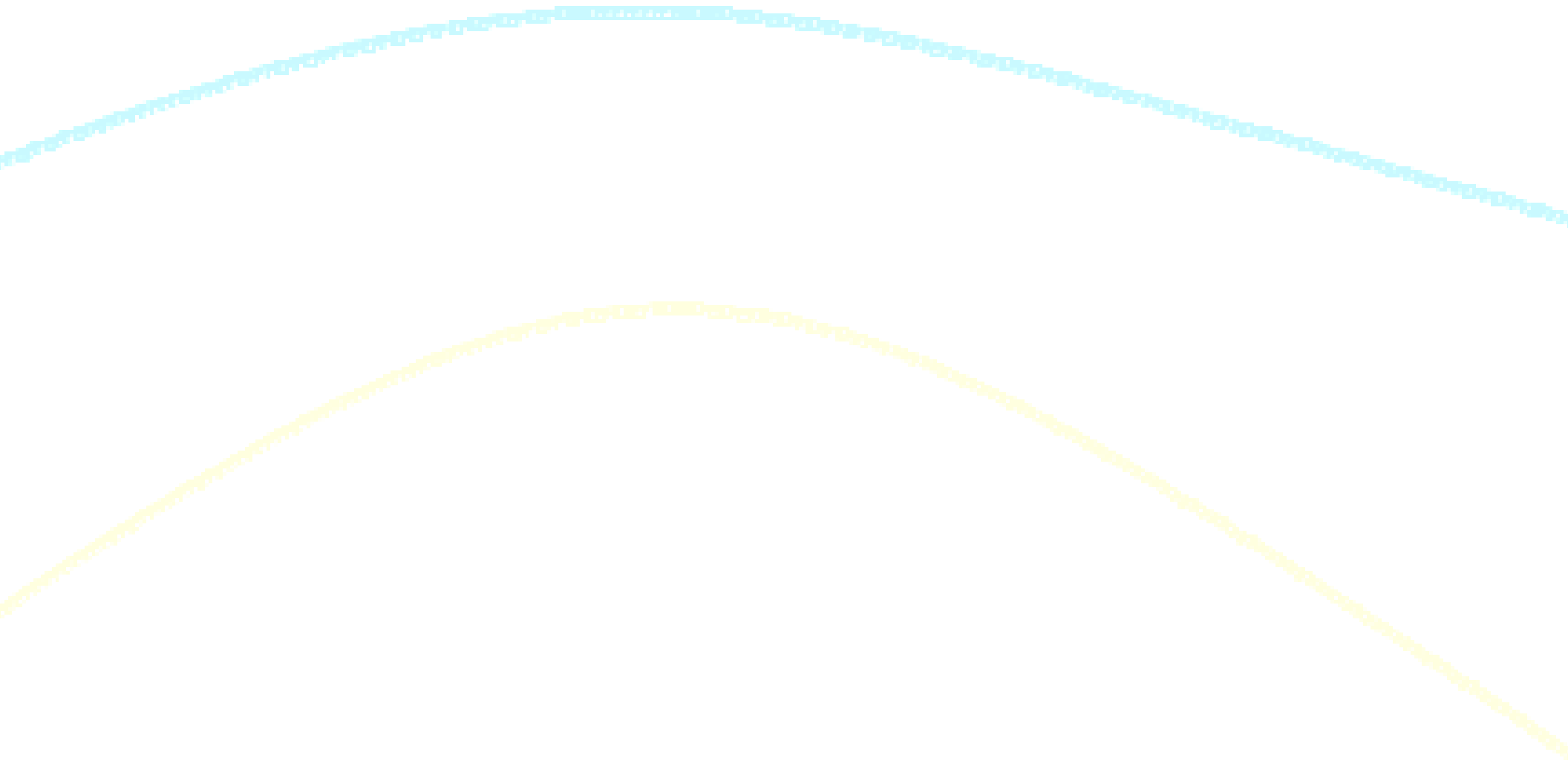
BLUESKY COMPOSABLE FEEDS 1/3

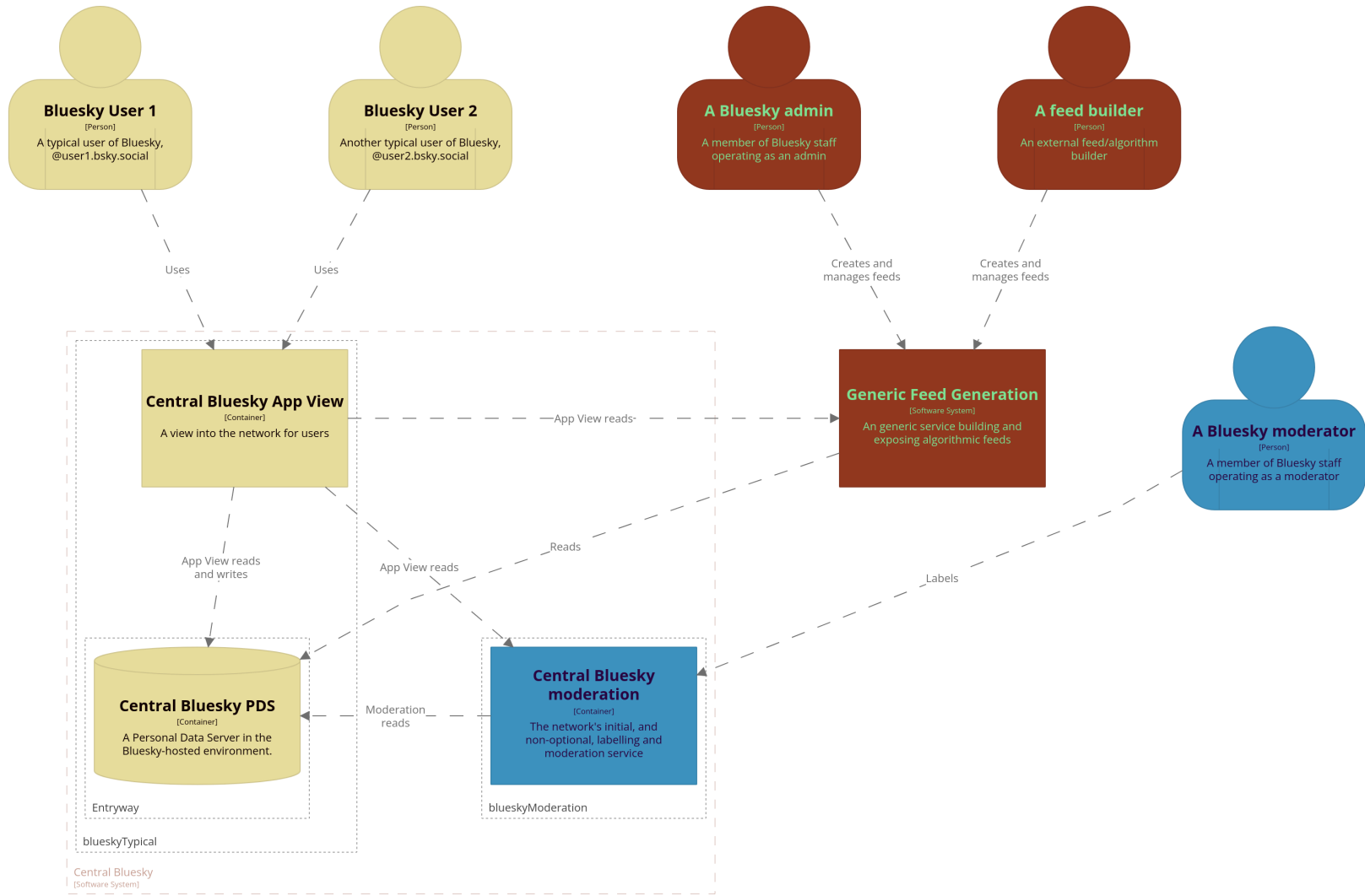


BLUESKY COMPOSABLE FEEDS 2/3 – FEEDS AS A SEPARATE APPLICATION TYPE



BLUESKY COMPOSABLE FEEDS 3/3 – GENERIC FEEDS

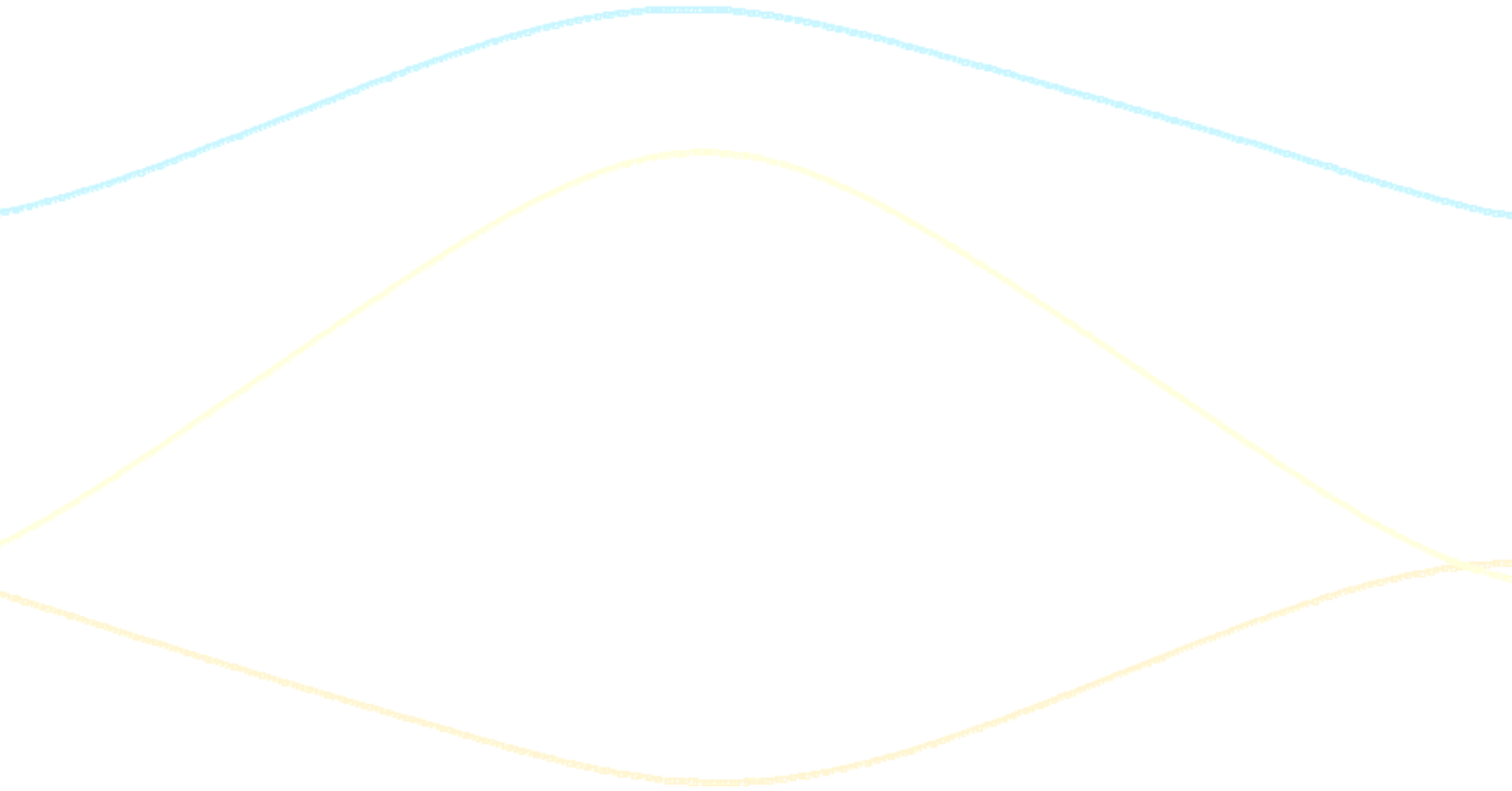




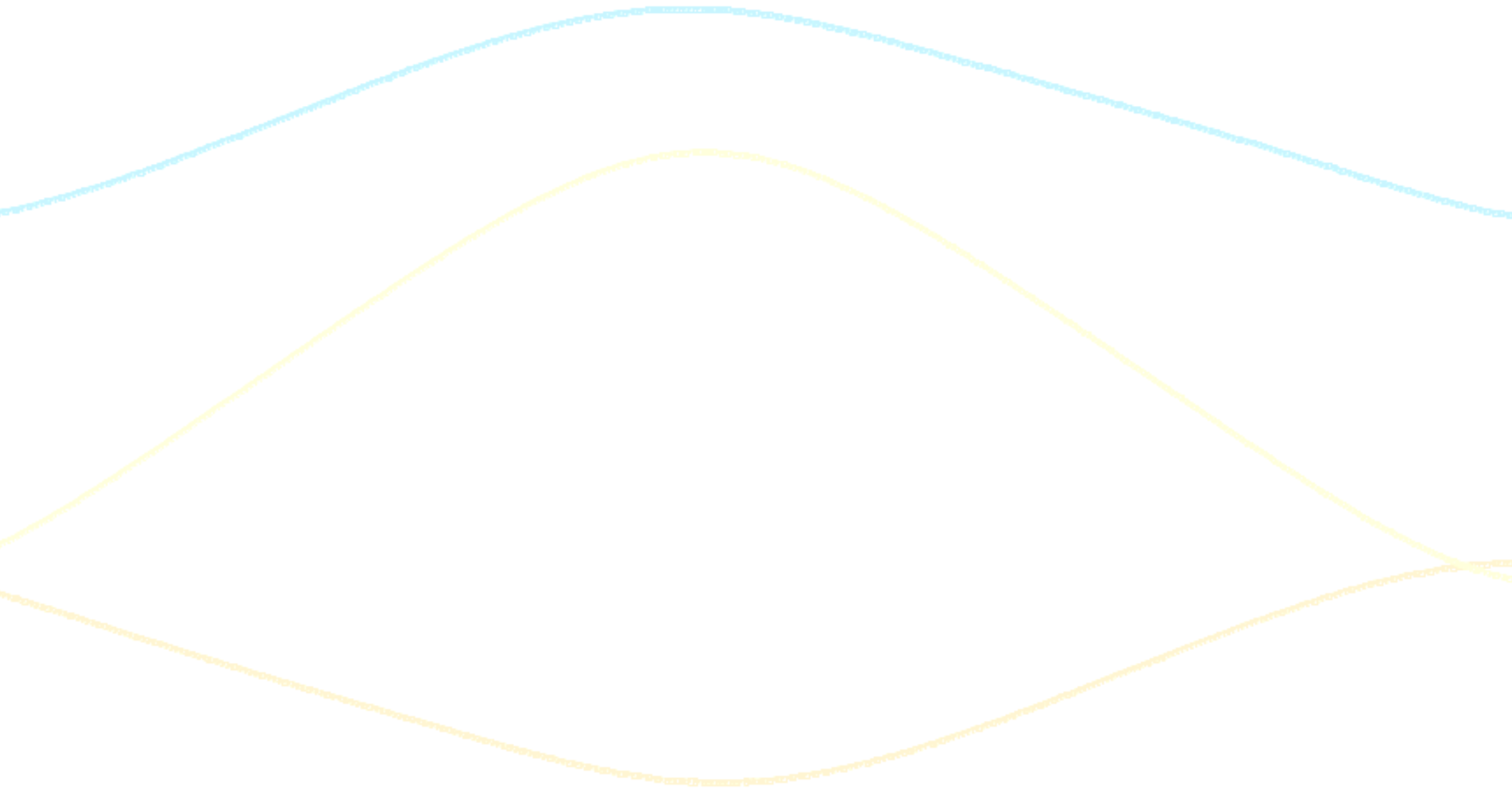


BLUESKY – THE APPVIEW

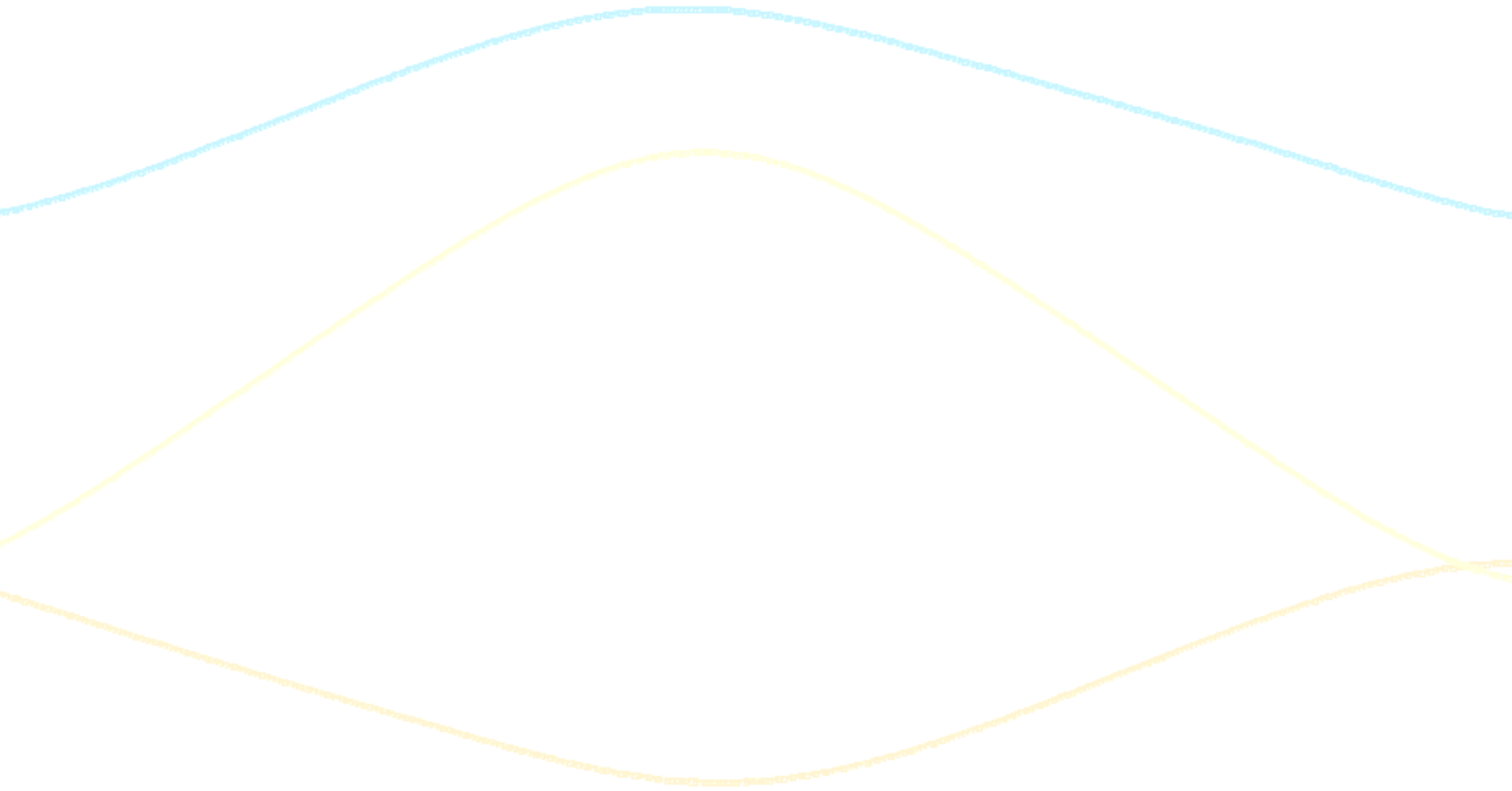
BLUESKY APPVIEW 1/3



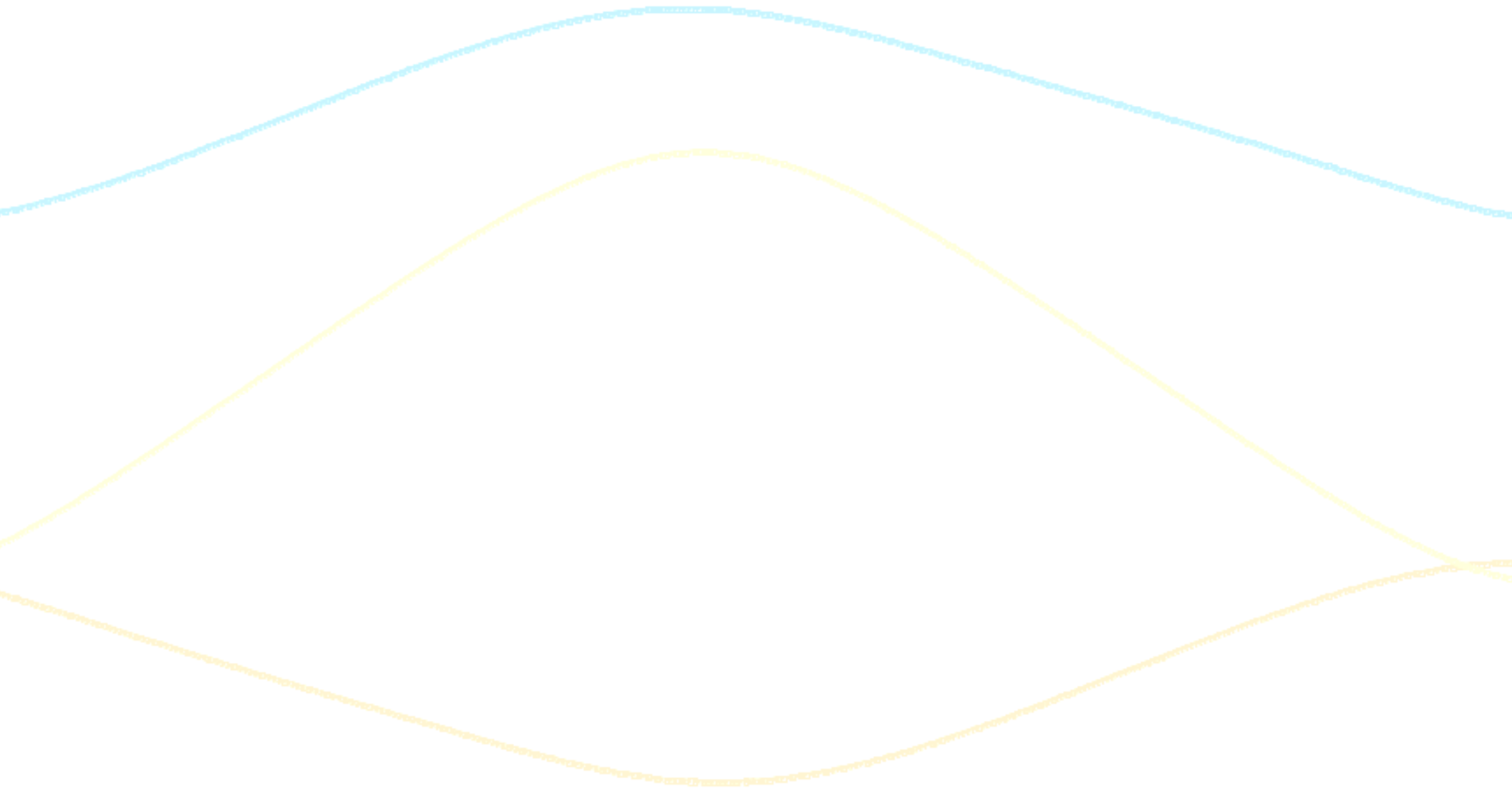
BLUESKY APPVIEW 1/3



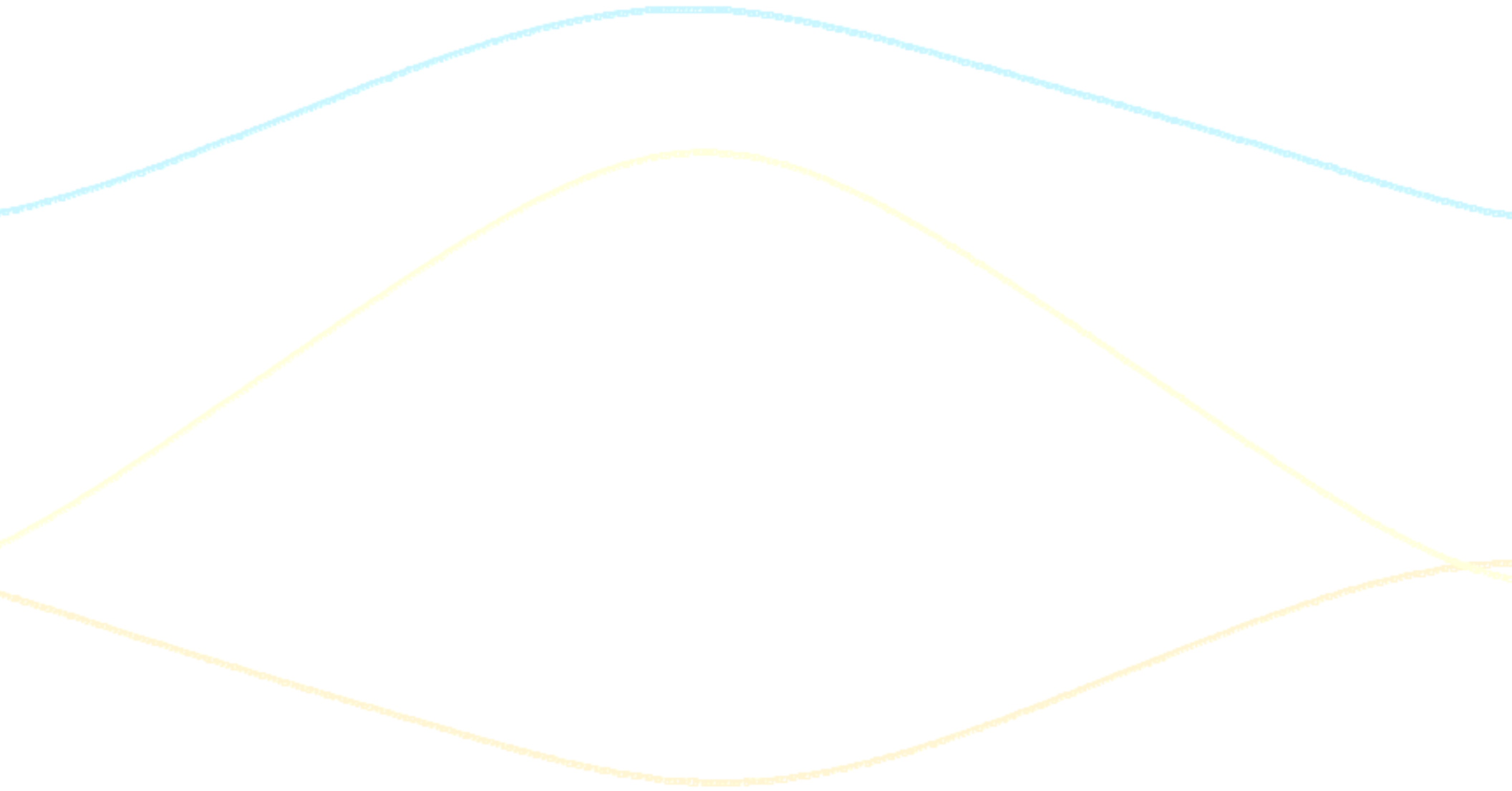
BLUESKY APPVIEW 1/3



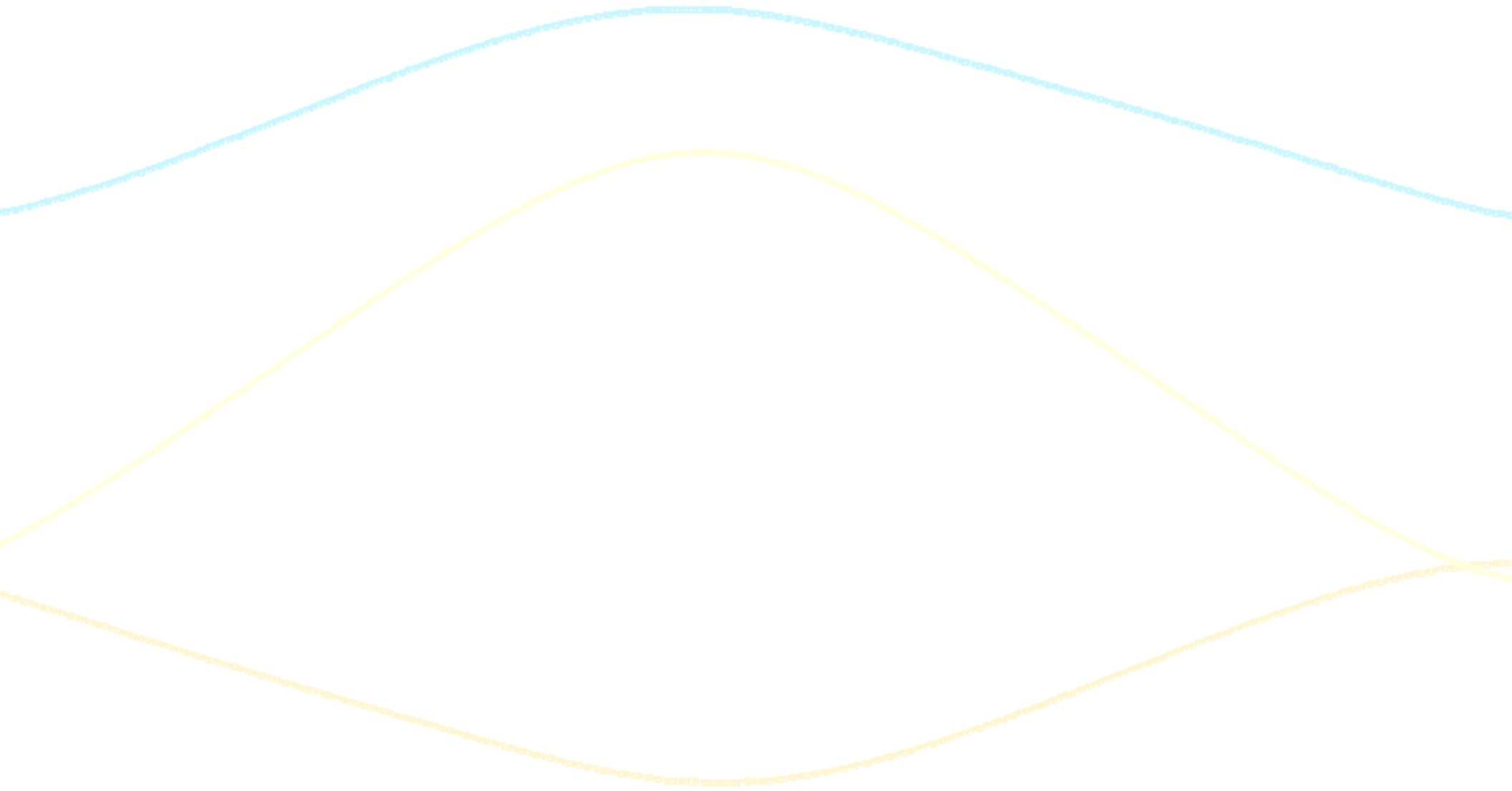
BLUESKY APPVIEW 1/3



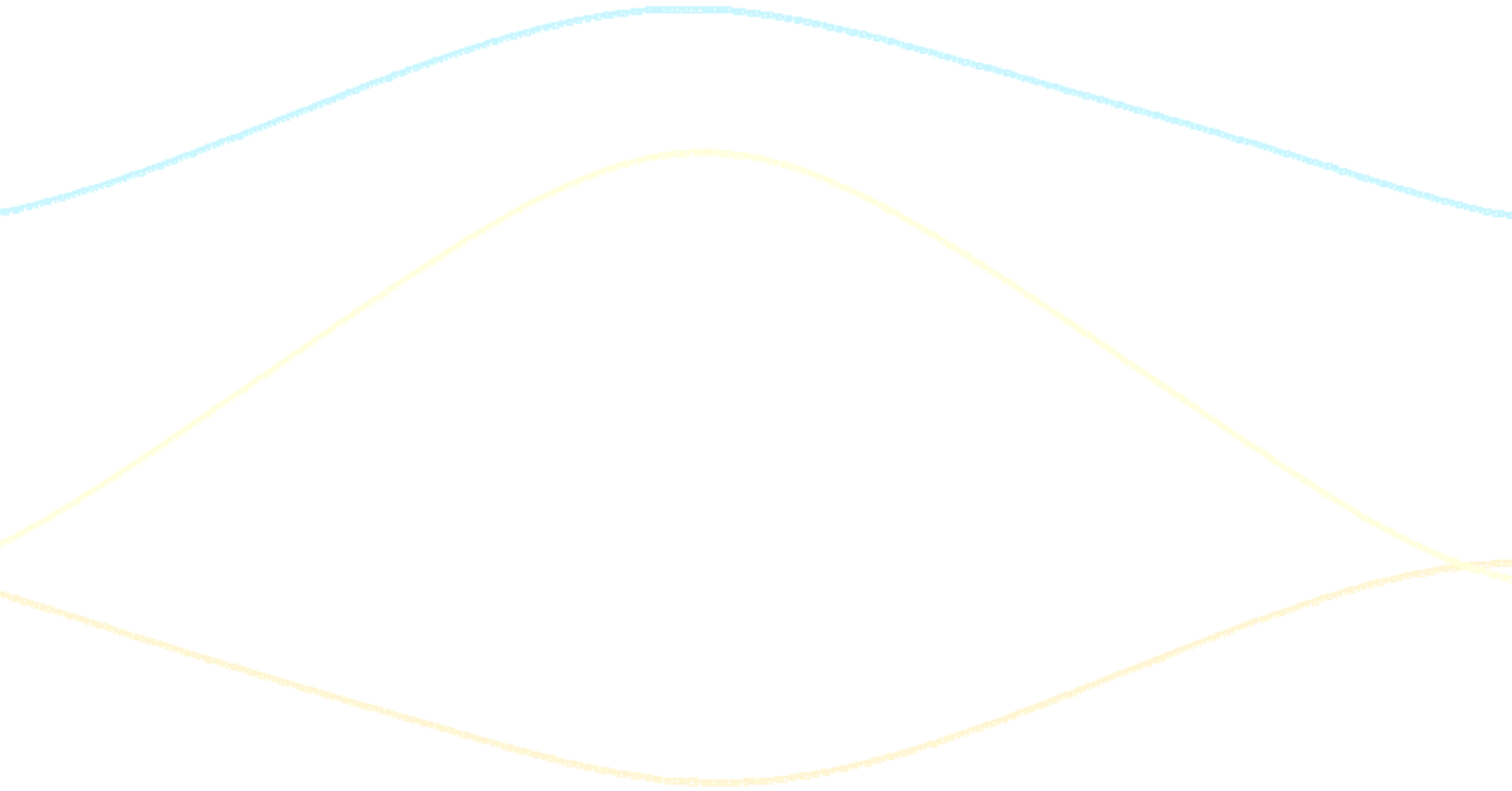
BLUESKY APPVIEW 1/3



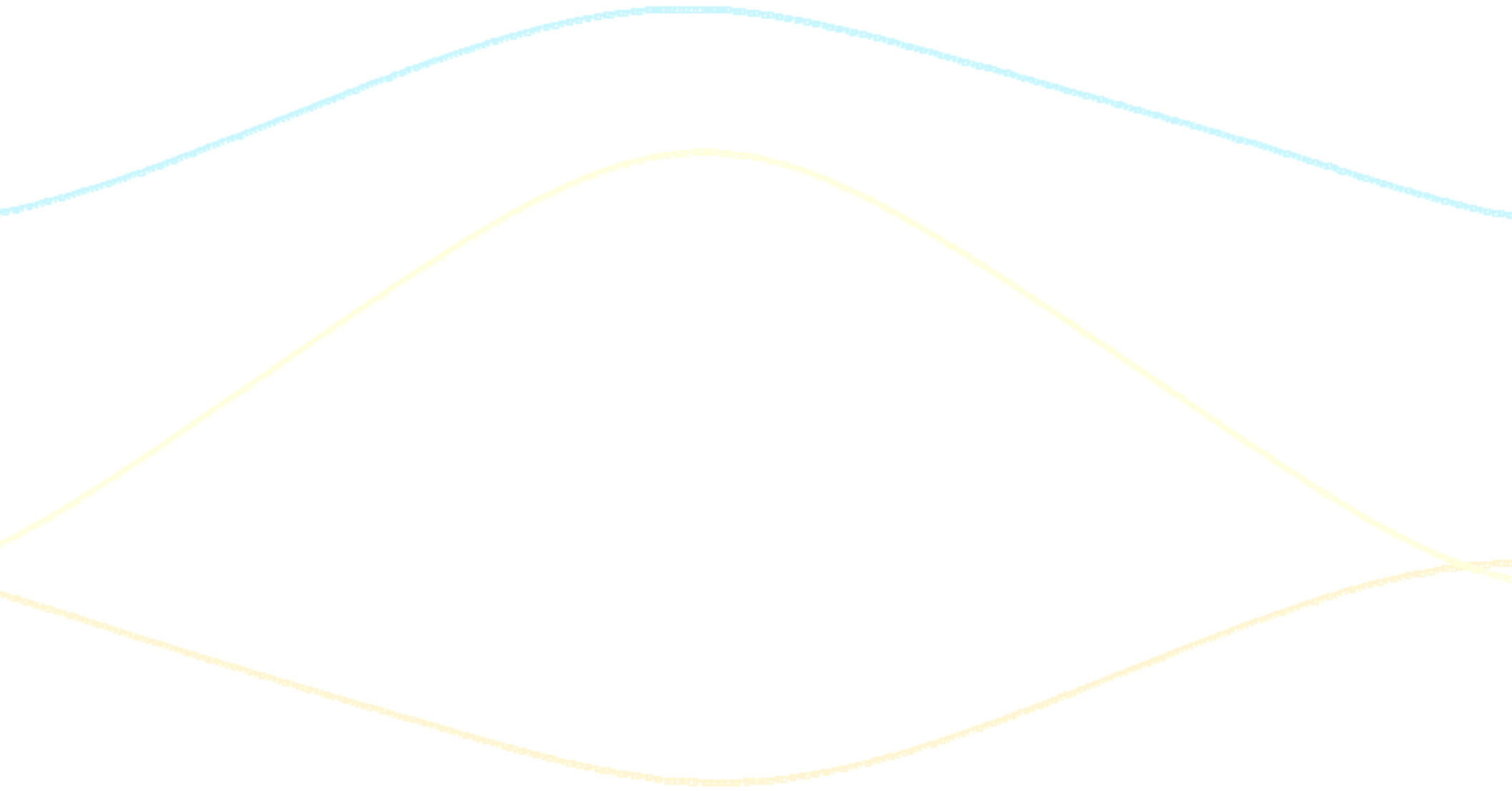
BLUESKY APPVIEW 1/3



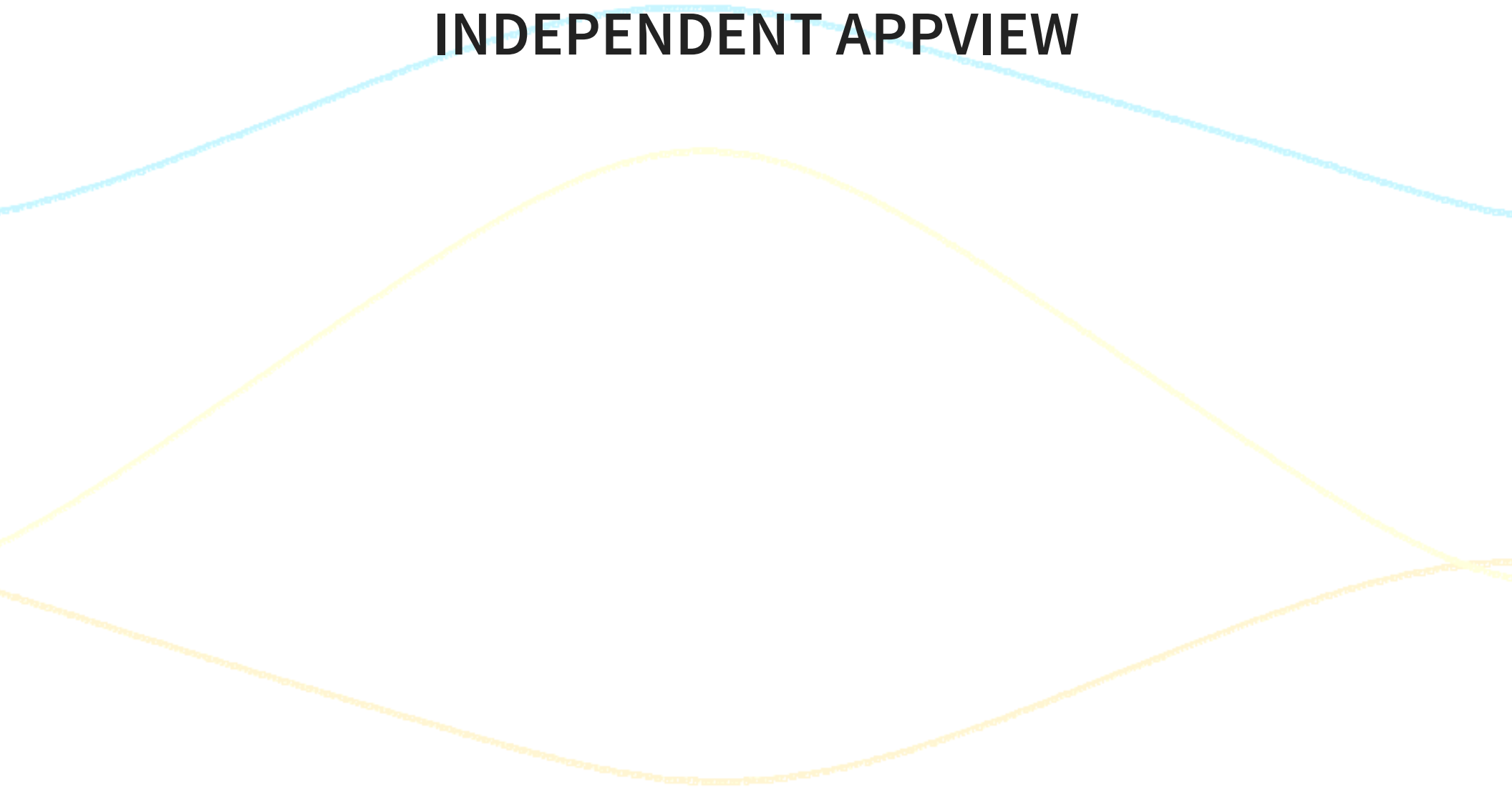
BLUESKY APPVIEW 1/3



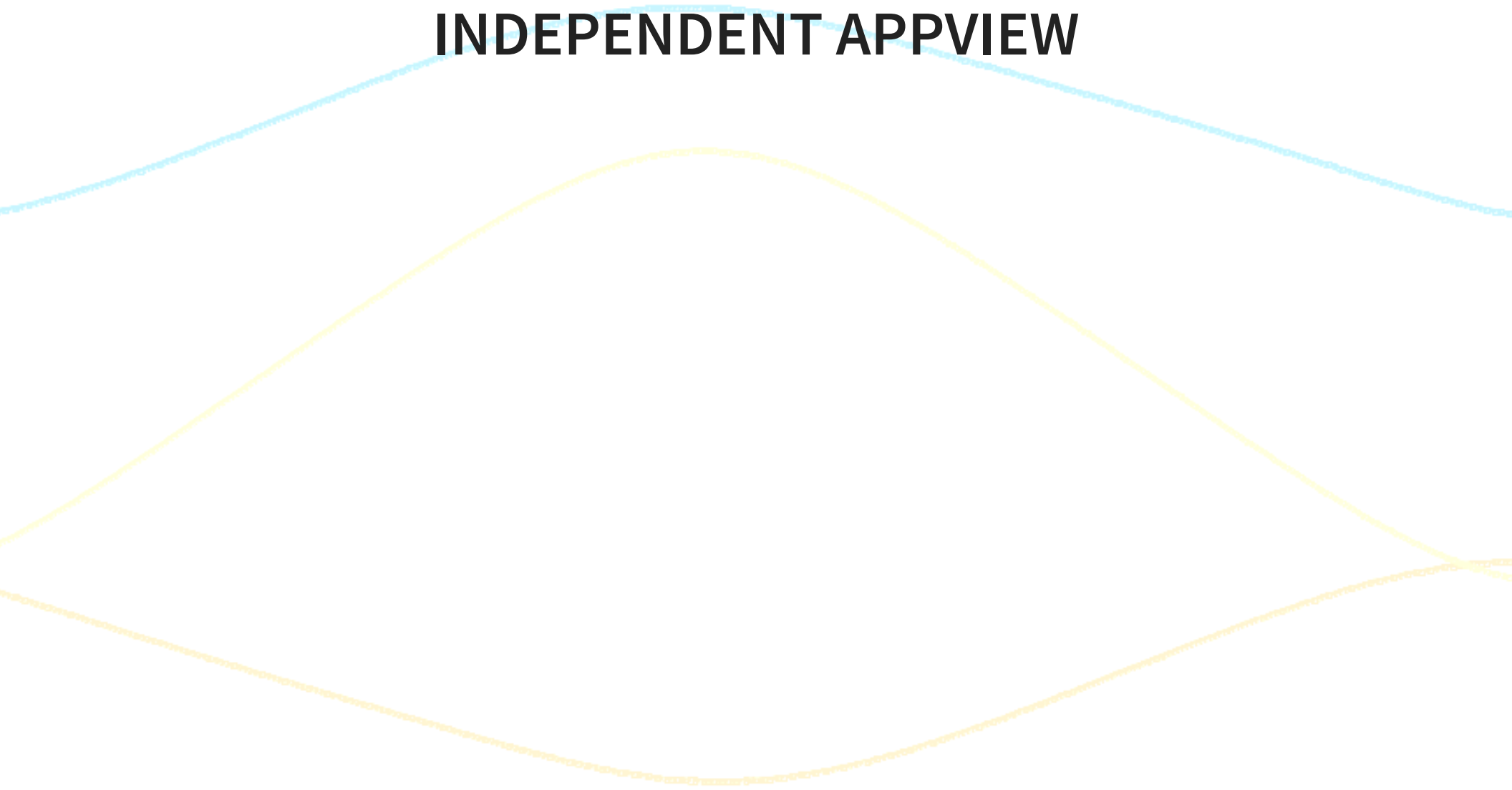
BLUESKY APPVIEW 1/3



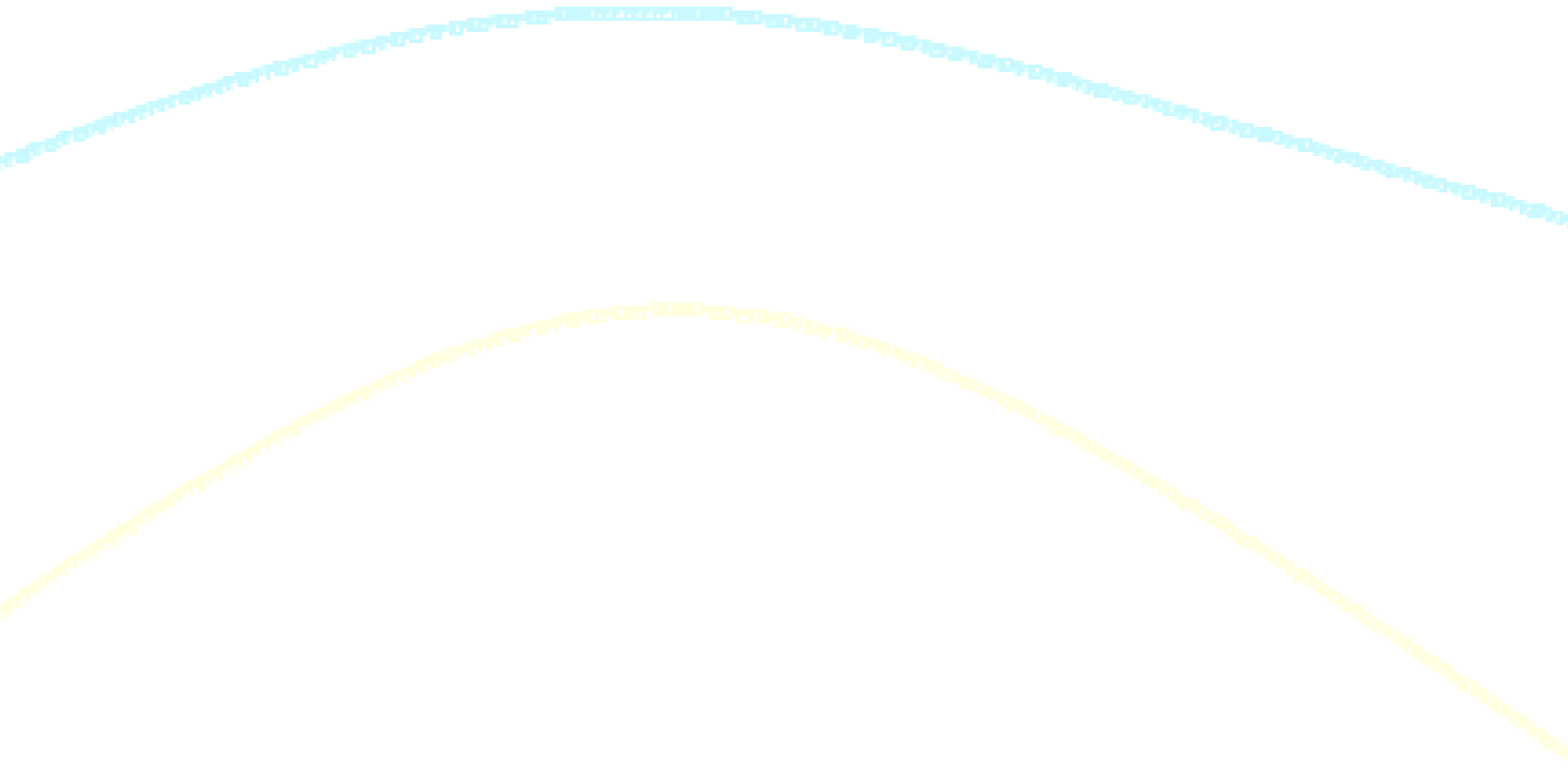
BLUESKY APPVIEW 2/3 – A 3RD-PARTY INDEPENDENT APPVIEW

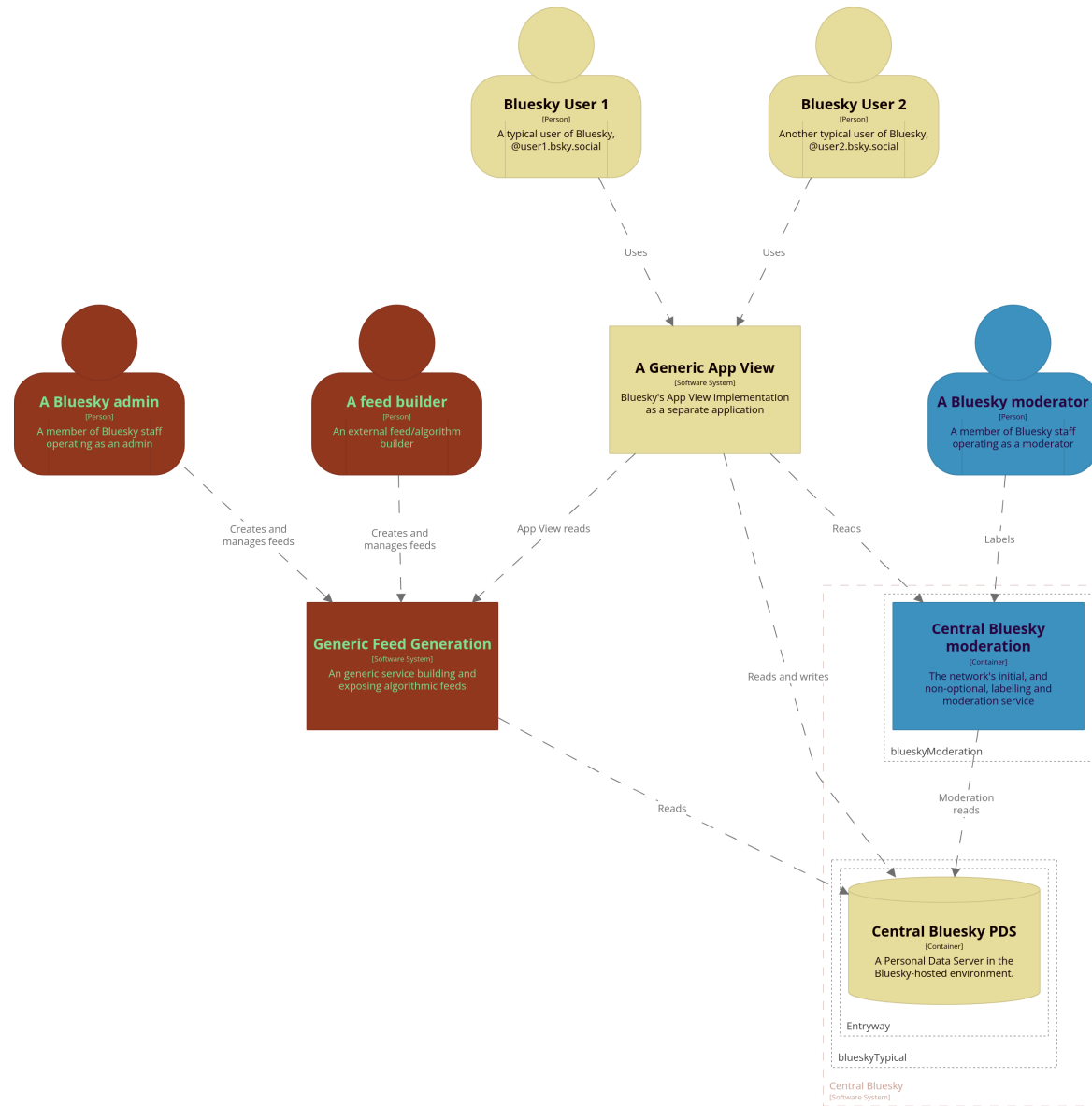


BLUESKY APPVIEW 2/3 – A 3RD-PARTY INDEPENDENT APPVIEW



BLUESKY APPVIEW 3/3 – GENERIC APPVIEW

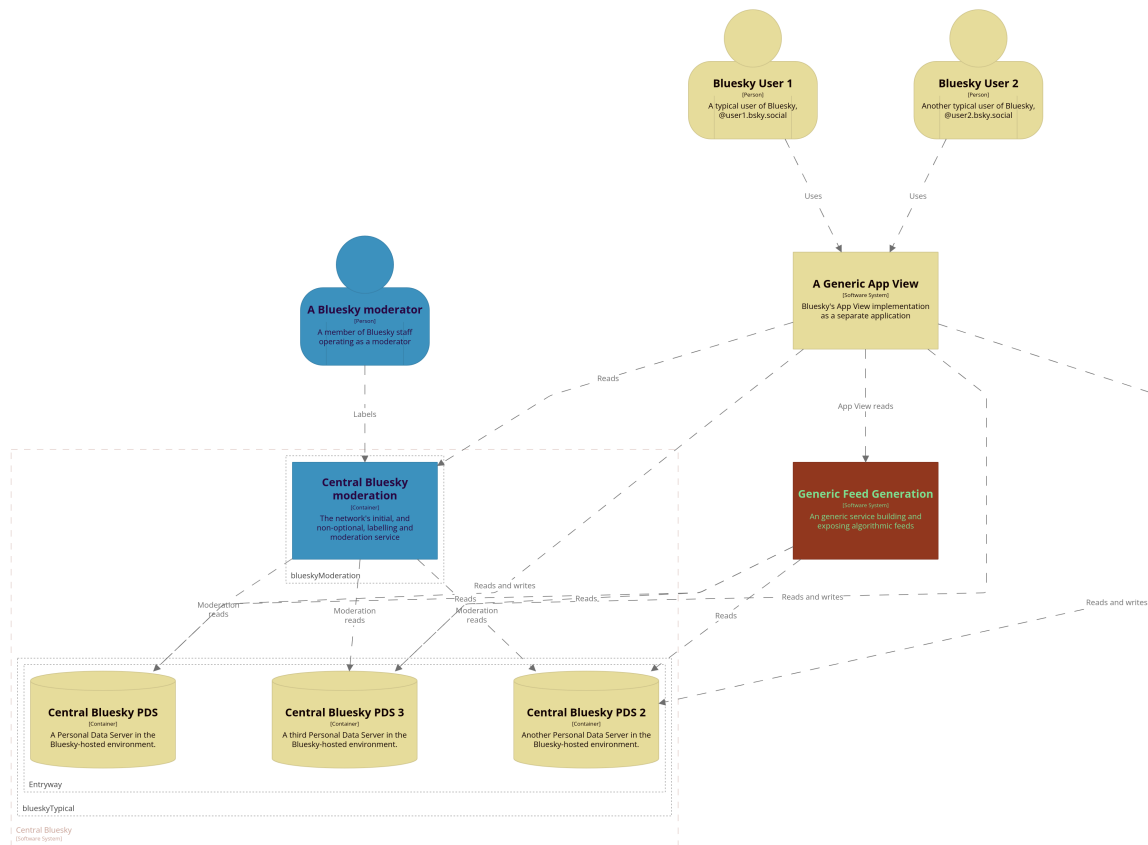




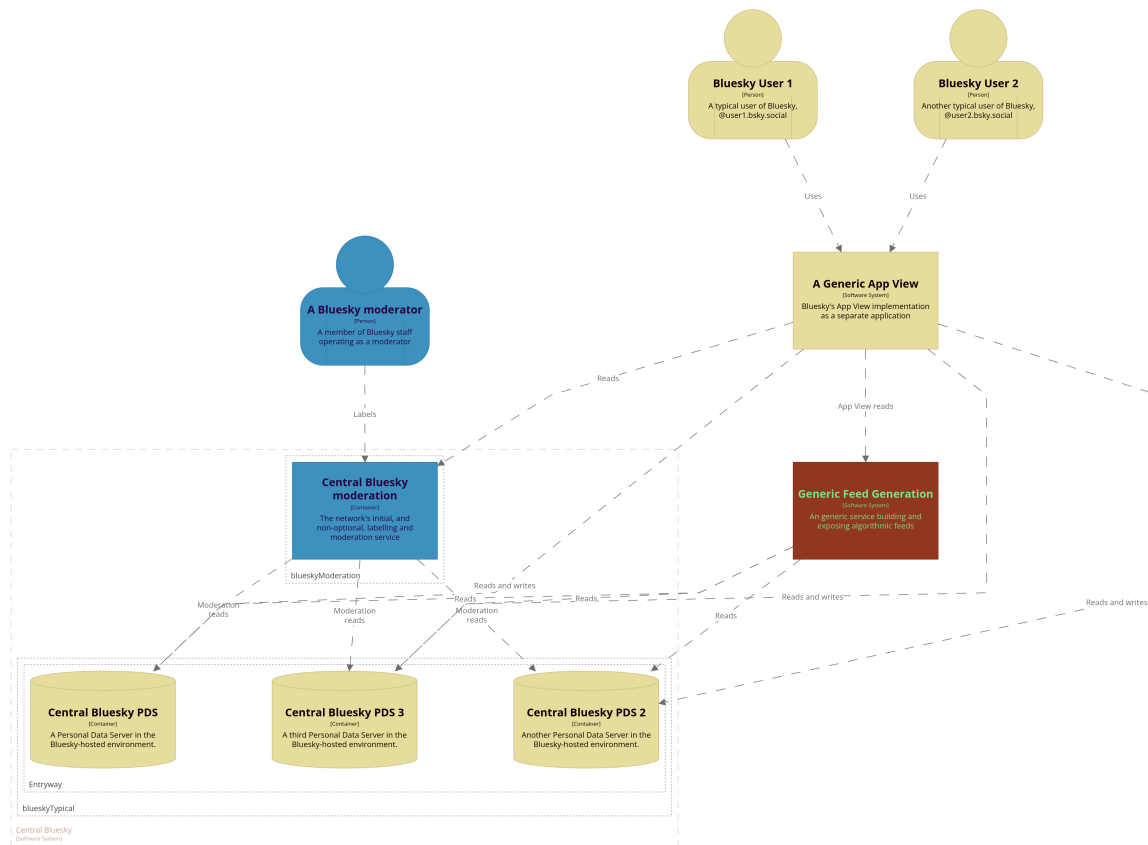


BLUESKY – THE RELAY AND THE PDS

BLUESKY RELAY 1/2 – 1 PDS INTO MANY

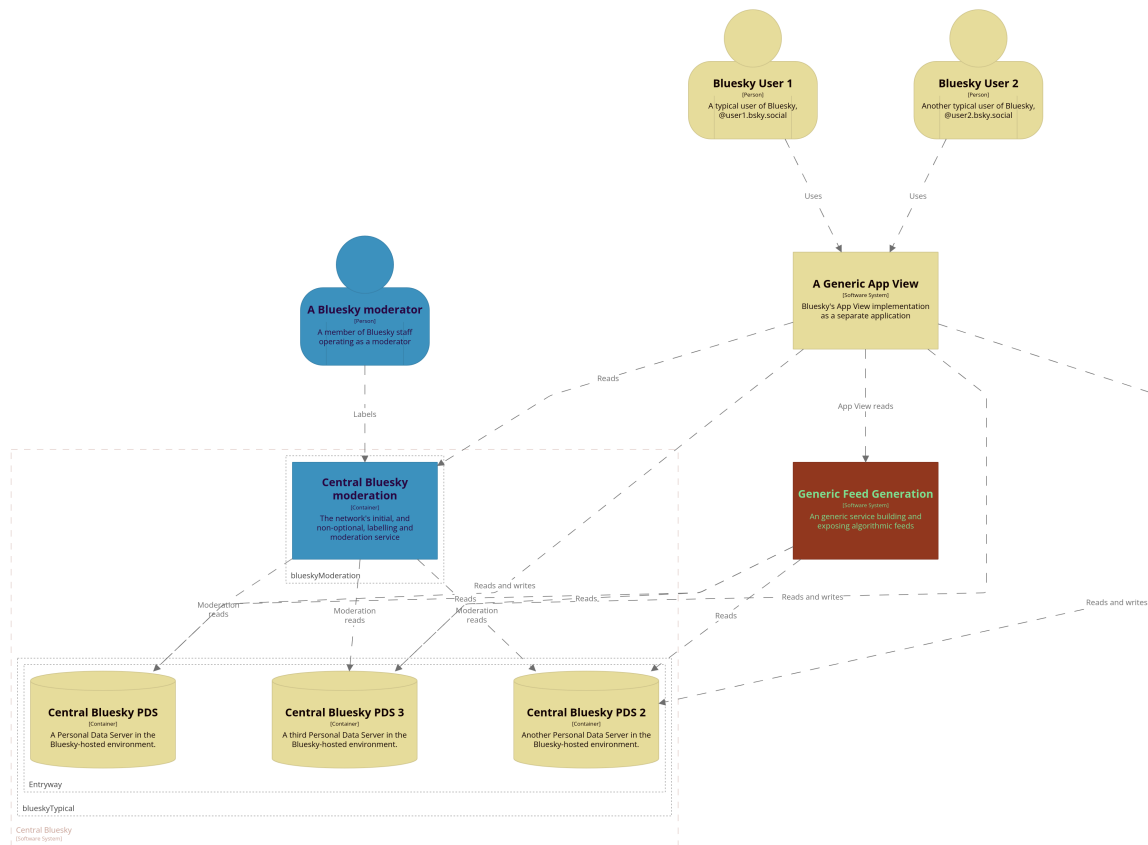


BLUESKY RELAY 1/2 – 1 PDS INTO MANY



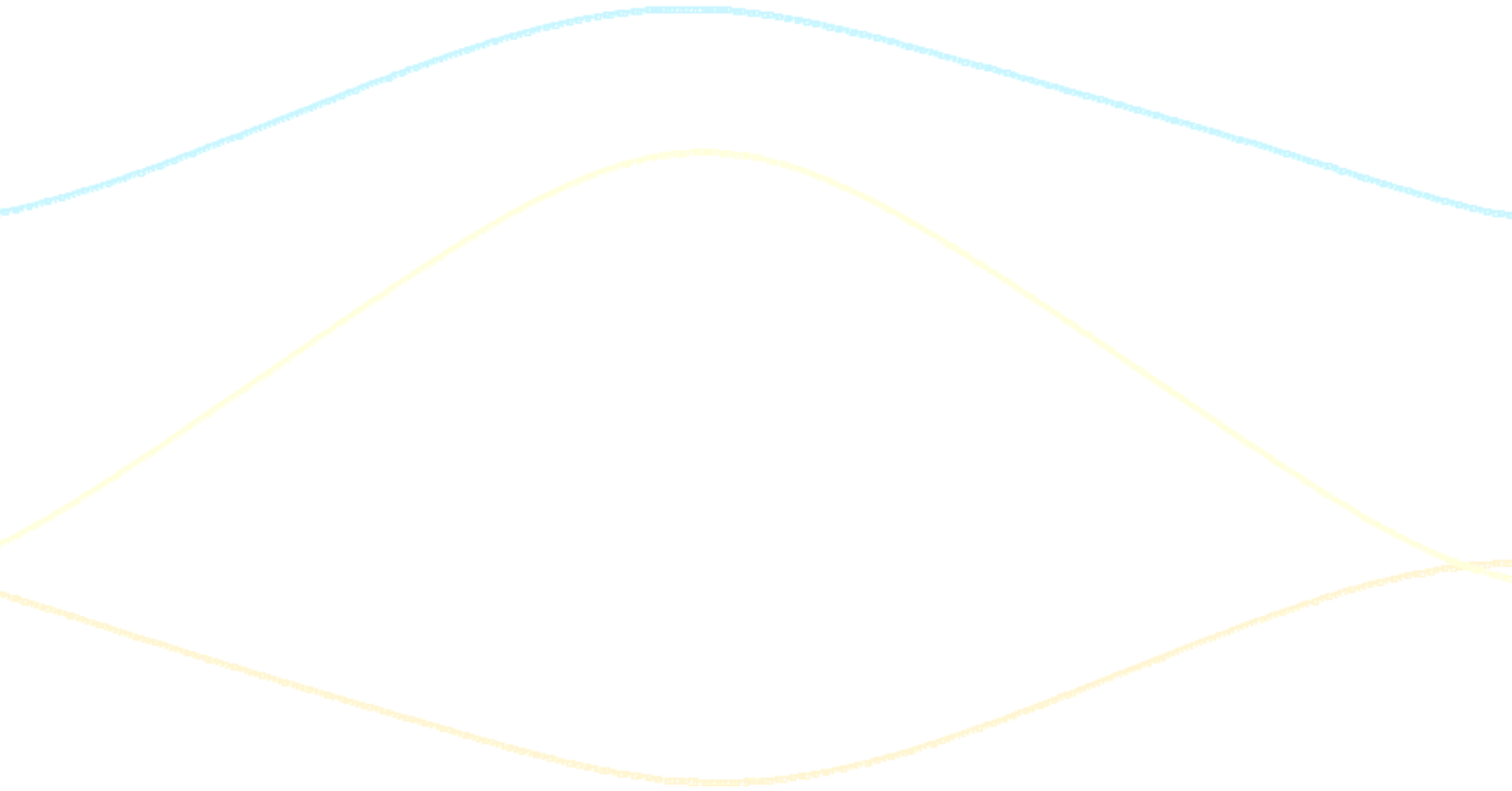
- Initially, Bluesky had just 1 PDS

BLUESKY RELAY 1/2 – 1 PDS INTO MANY

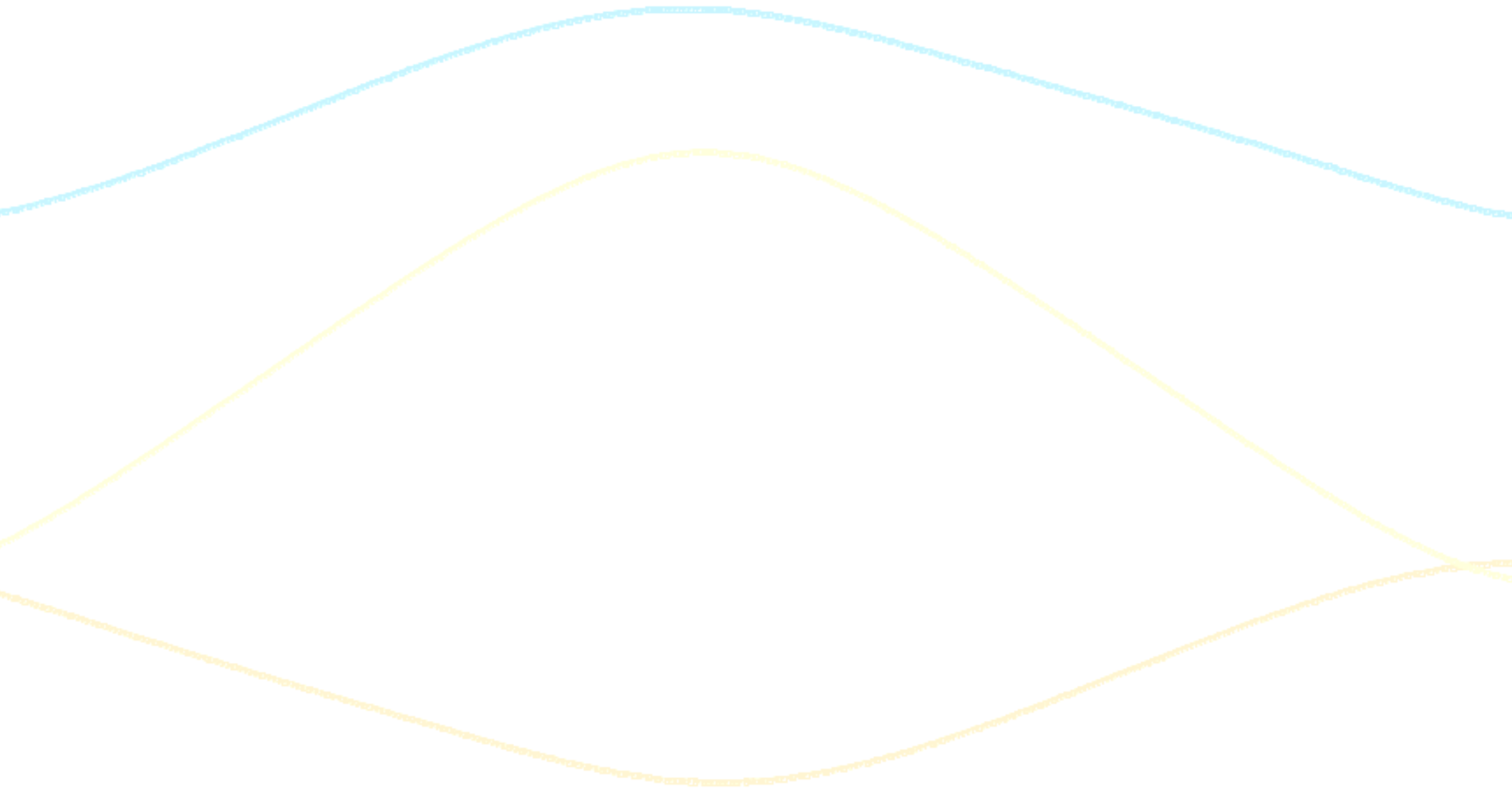


- Initially, Bluesky had just 1 PDS
- Separated out into multiple PDSs for performance reasons

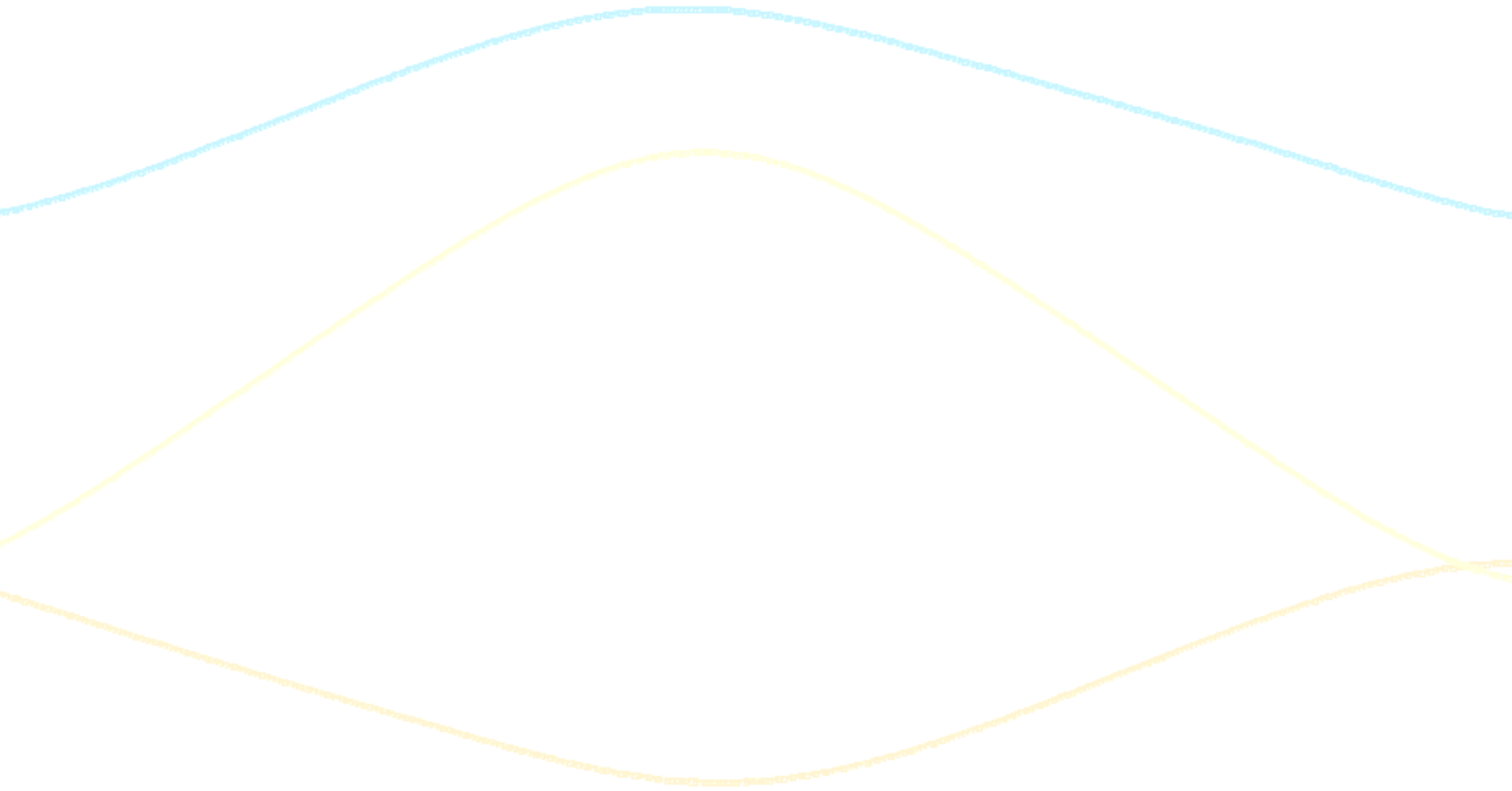
BLUESKY RELAY 2/2 – RELAY, AS A PROXY TO THE PDSES



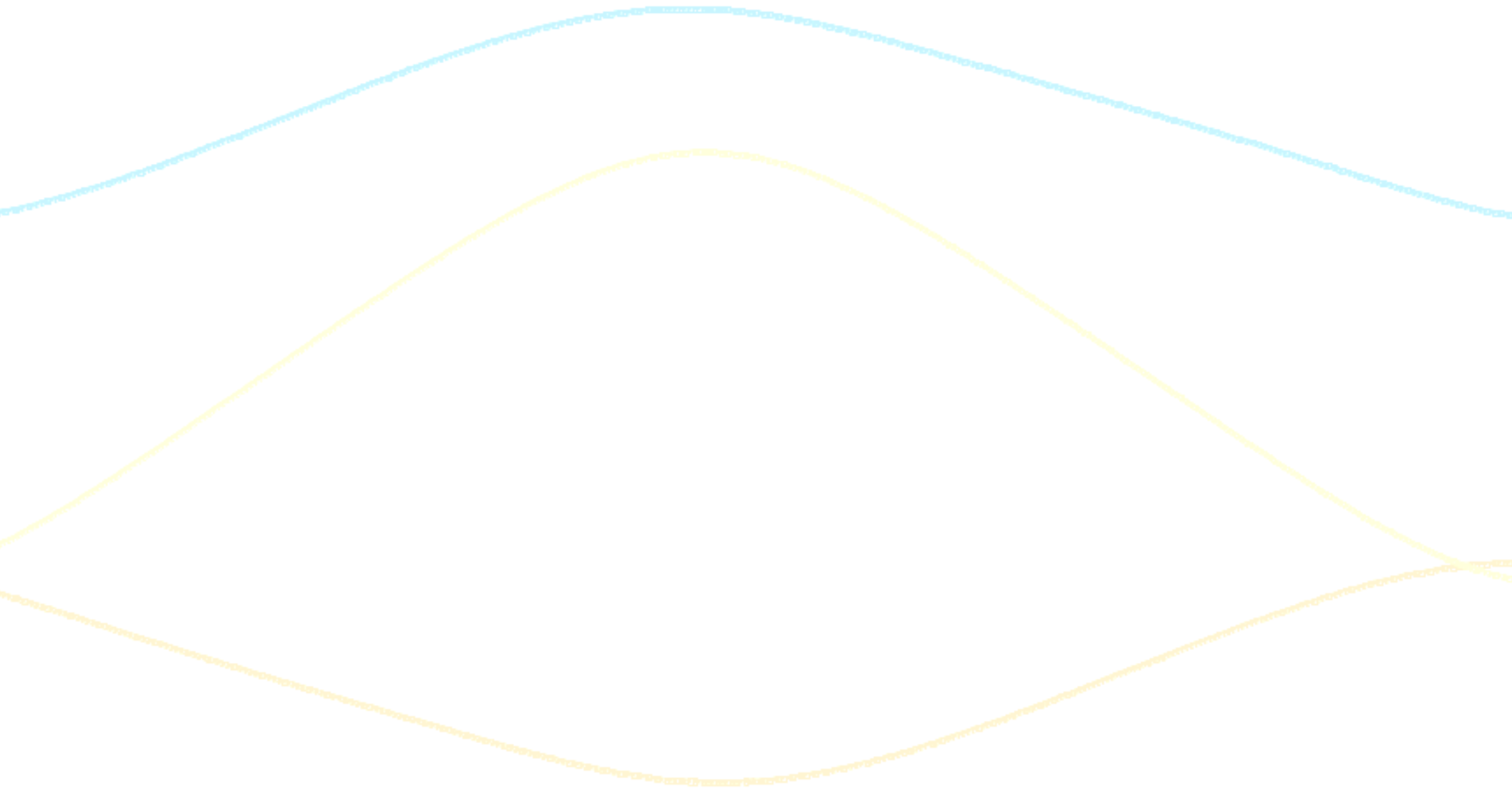
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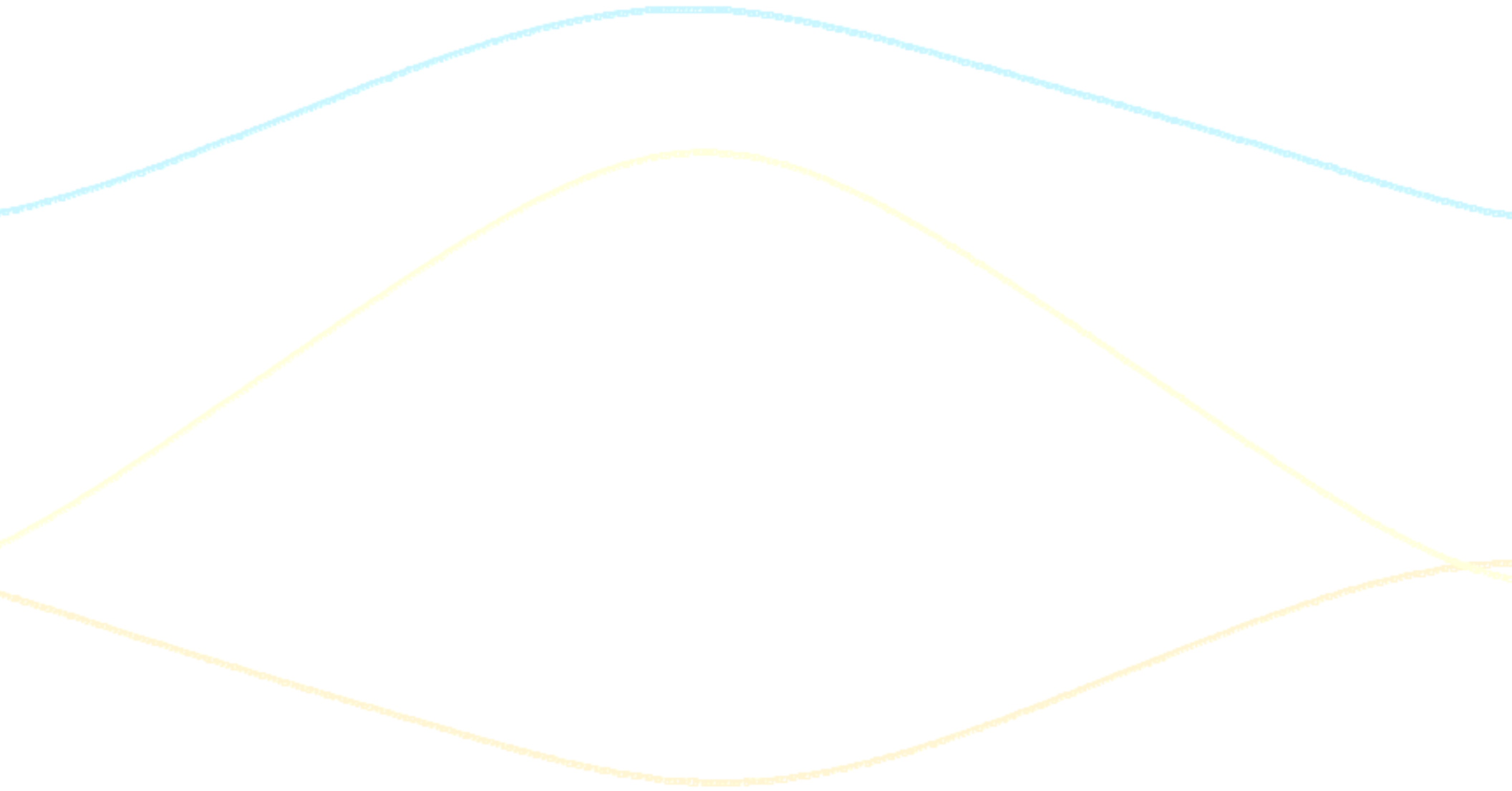
BLUESKY RELAY 2/2 – RELAY, AS A PROXY TO THE PDSES



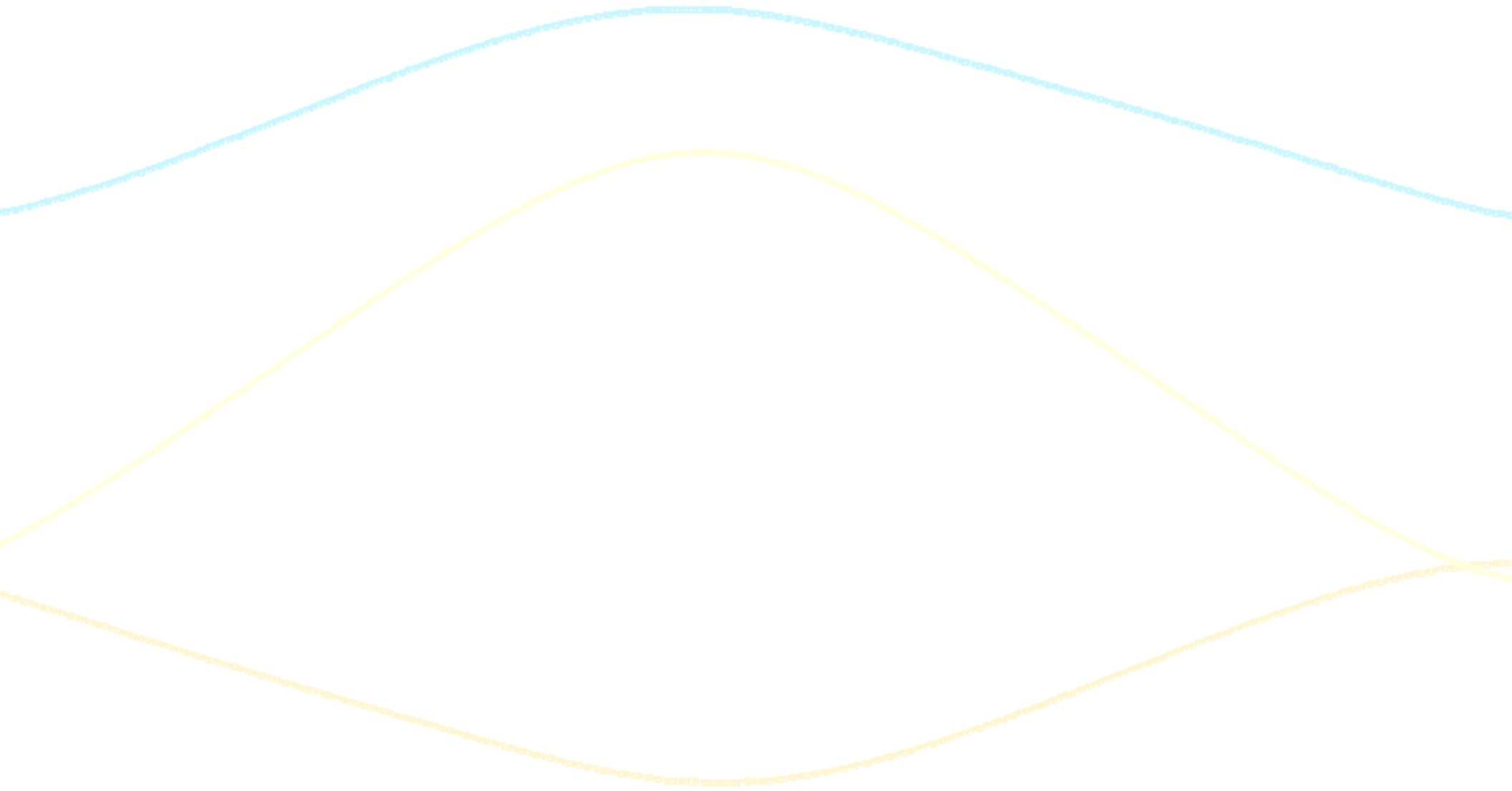
BLUESKY RELAY 2/2 – RELAY, AS A PROXY TO THE PDSES



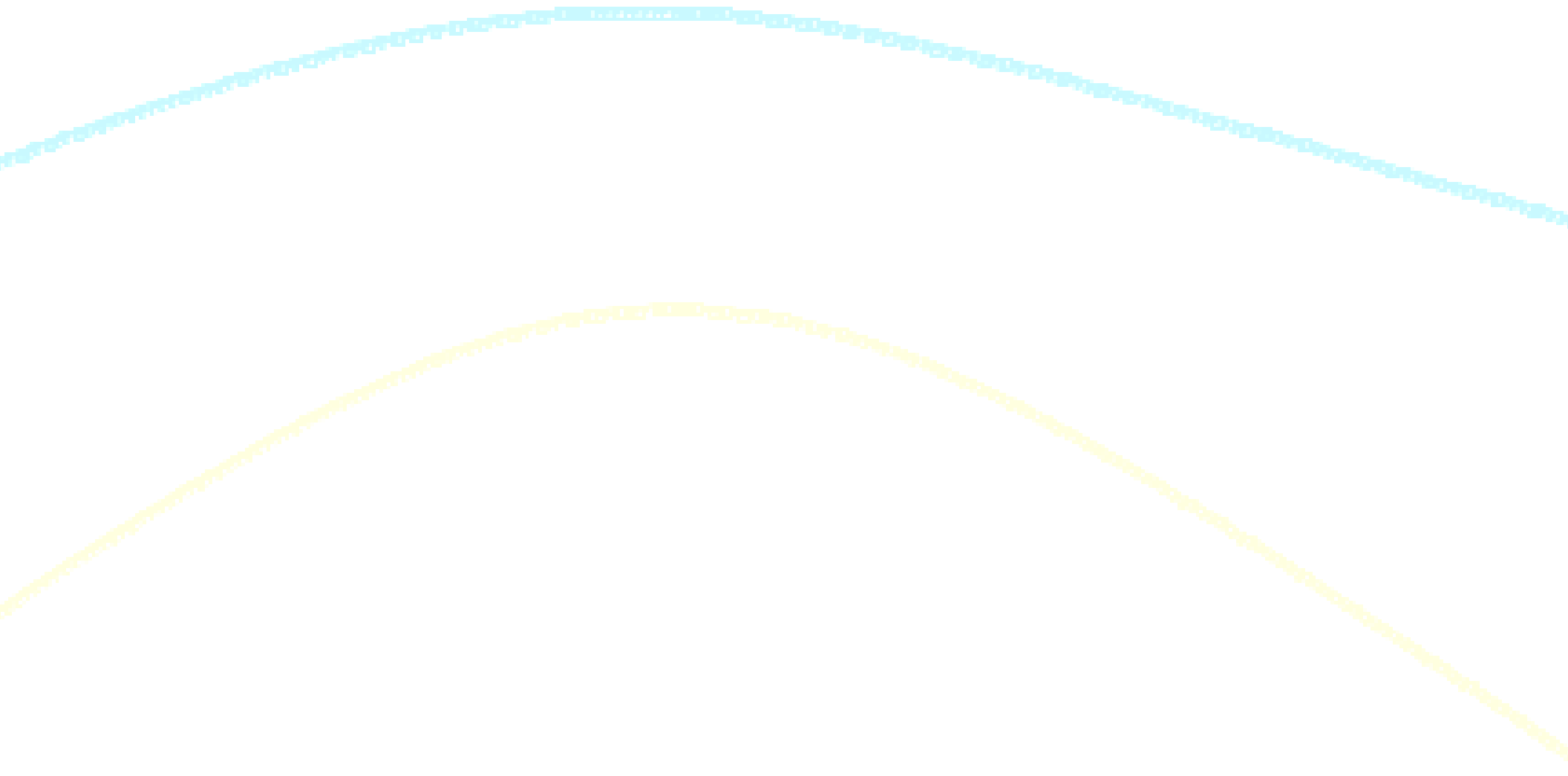
BLUESKY RELAY 2/2 – RELAY, AS A PROXY TO THE PDSES

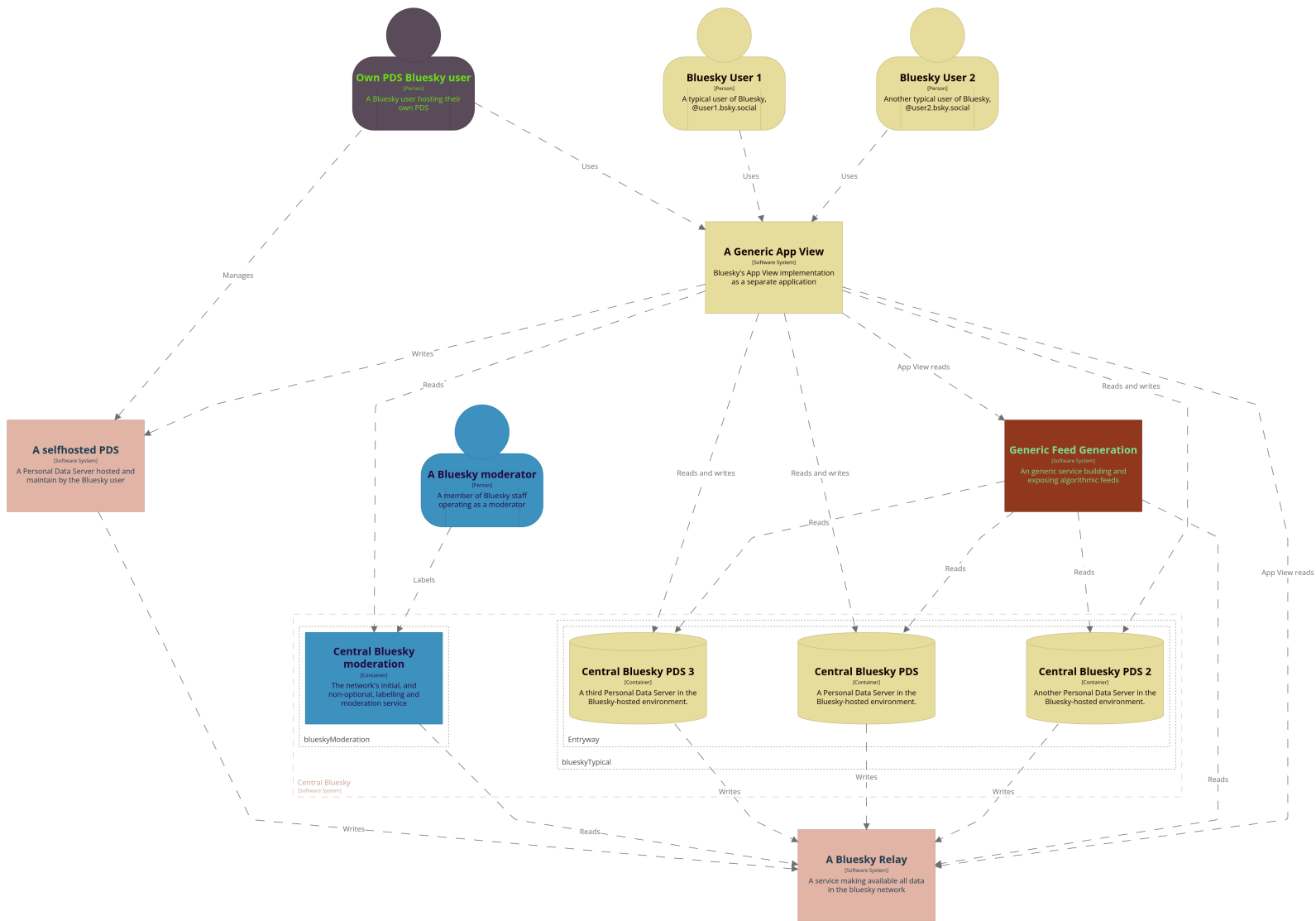


BLUESKY RELAY 2/2 – RELAY, AS A PROXY TO THE PDSES

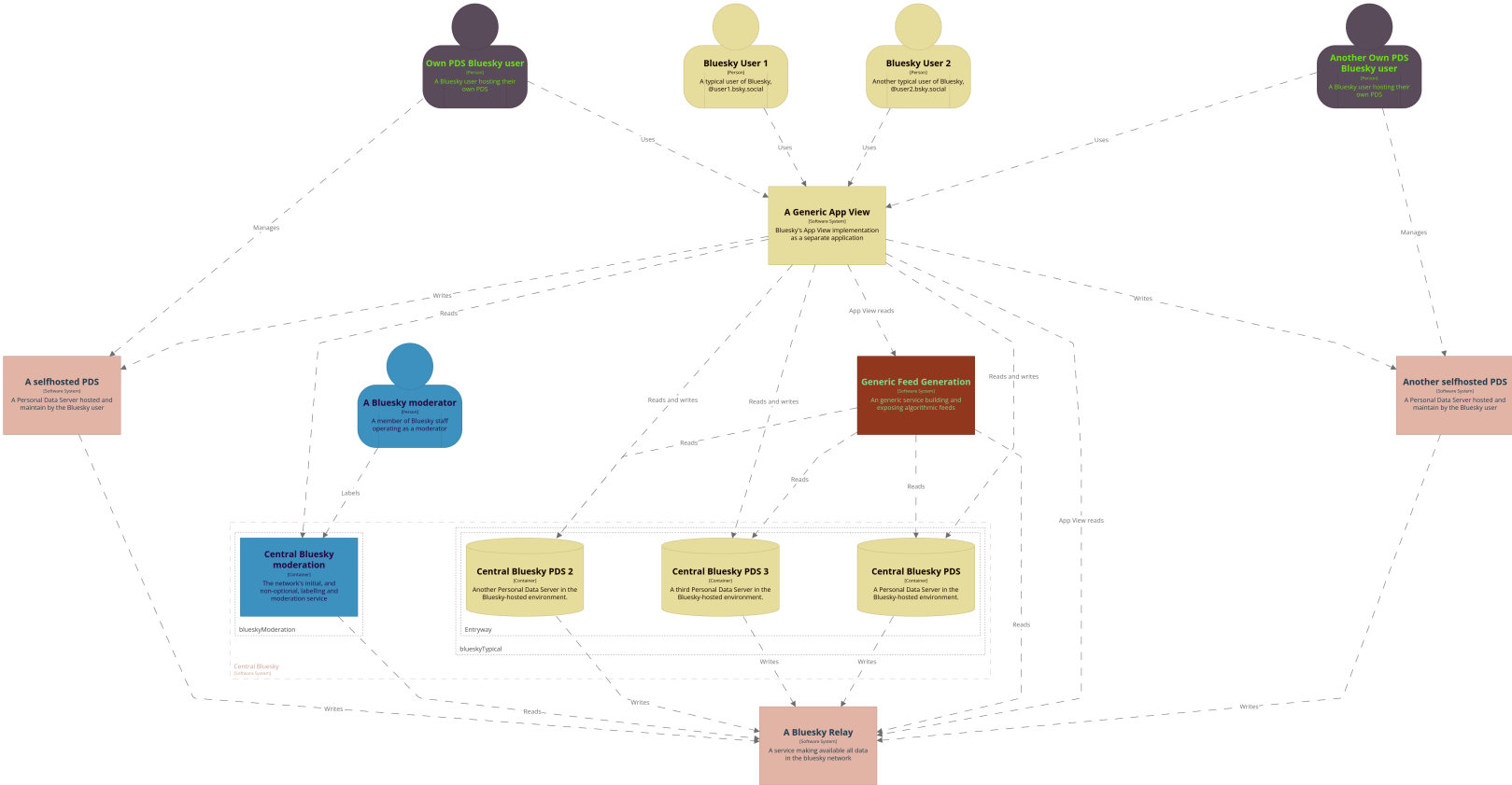


BLUESKY PDS 1/3 – AN INDEPENDENT PDS: "FEDERATION" OF A SORT

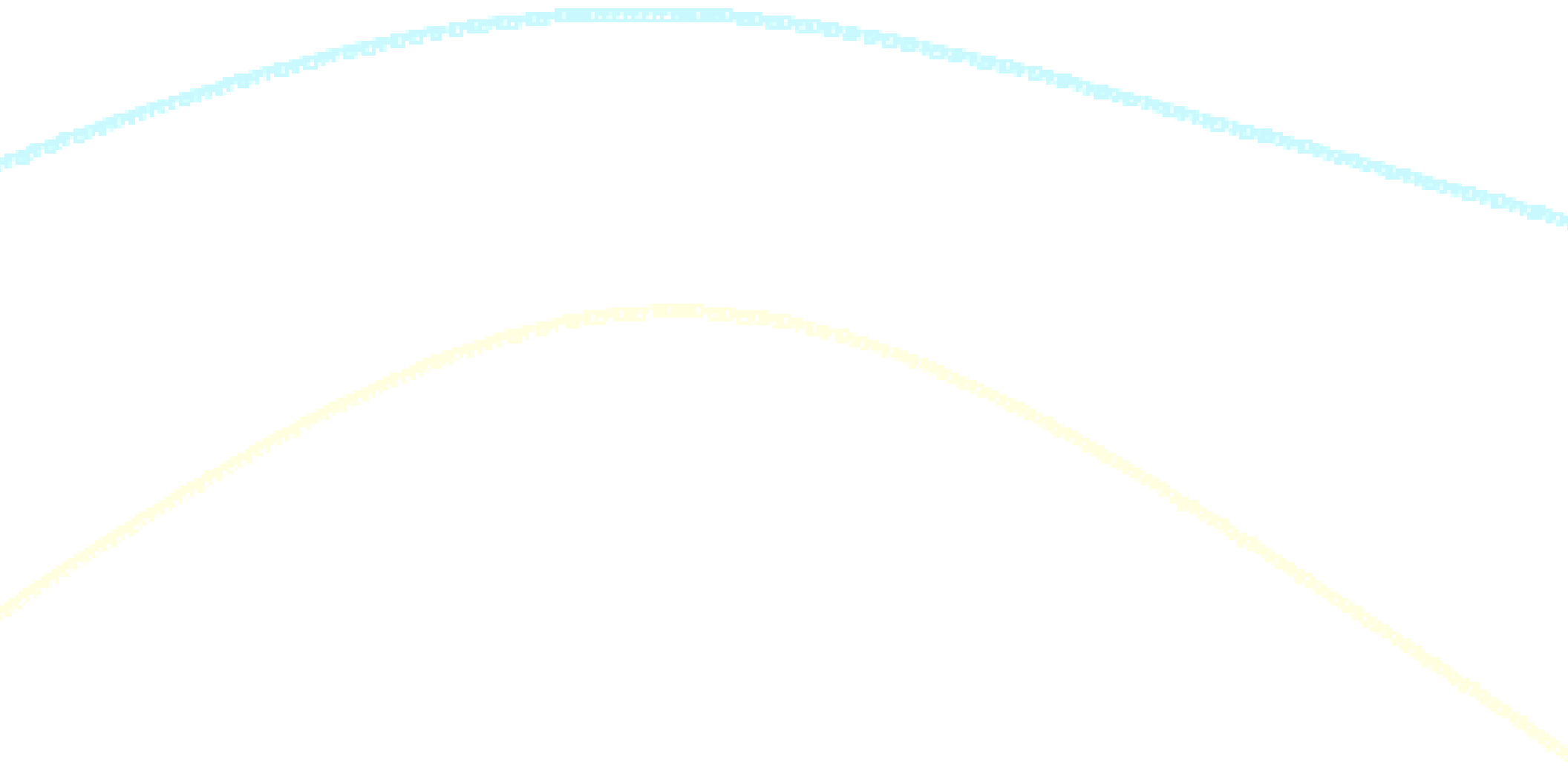


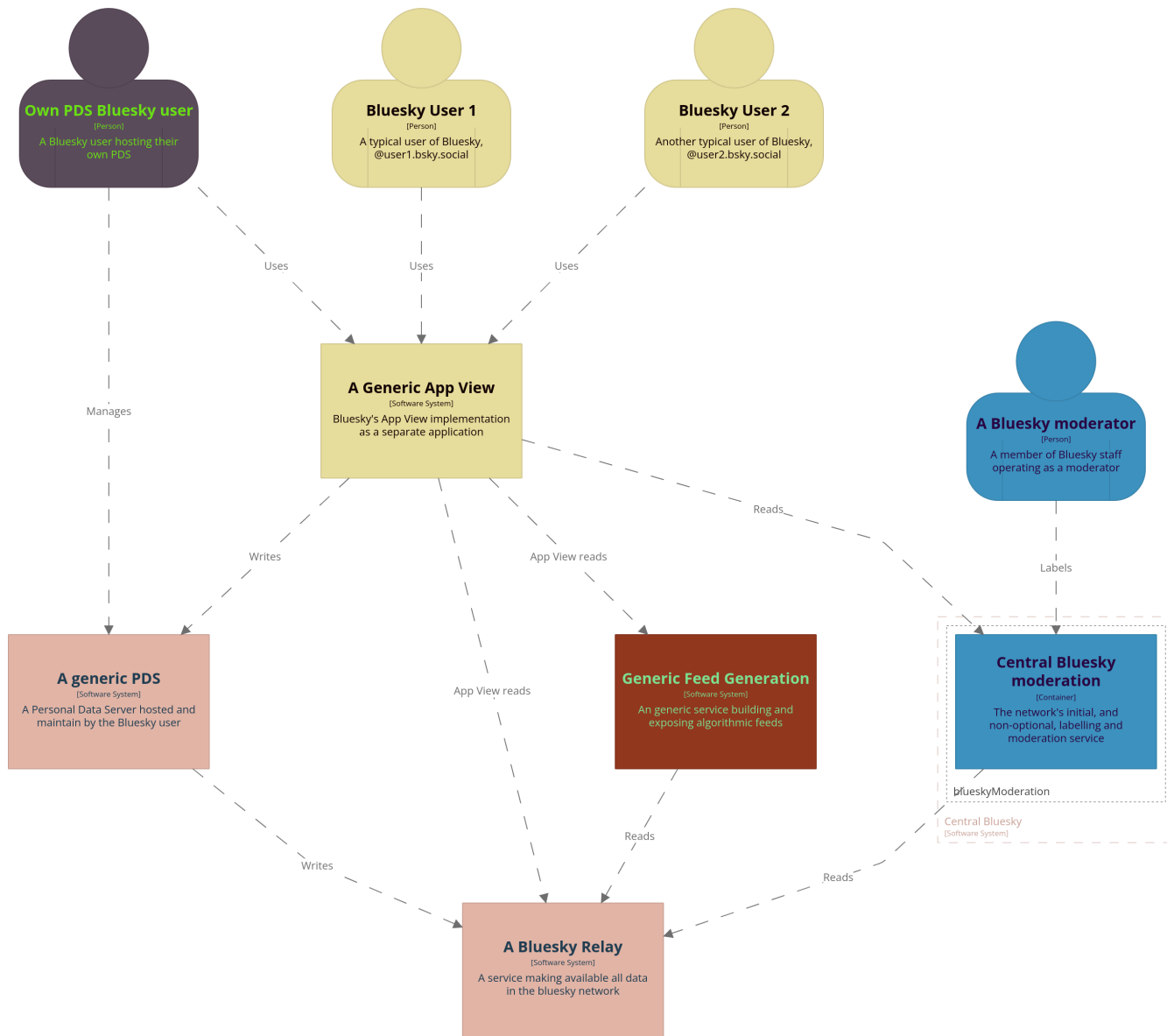


BLUESKY PDS 2/3 – AN INDEPENDENT PDS: "FEDERATION" OF A SORT



BLUESKY PDS 3/3 – PDS: "FEDERATION" OF A SORT

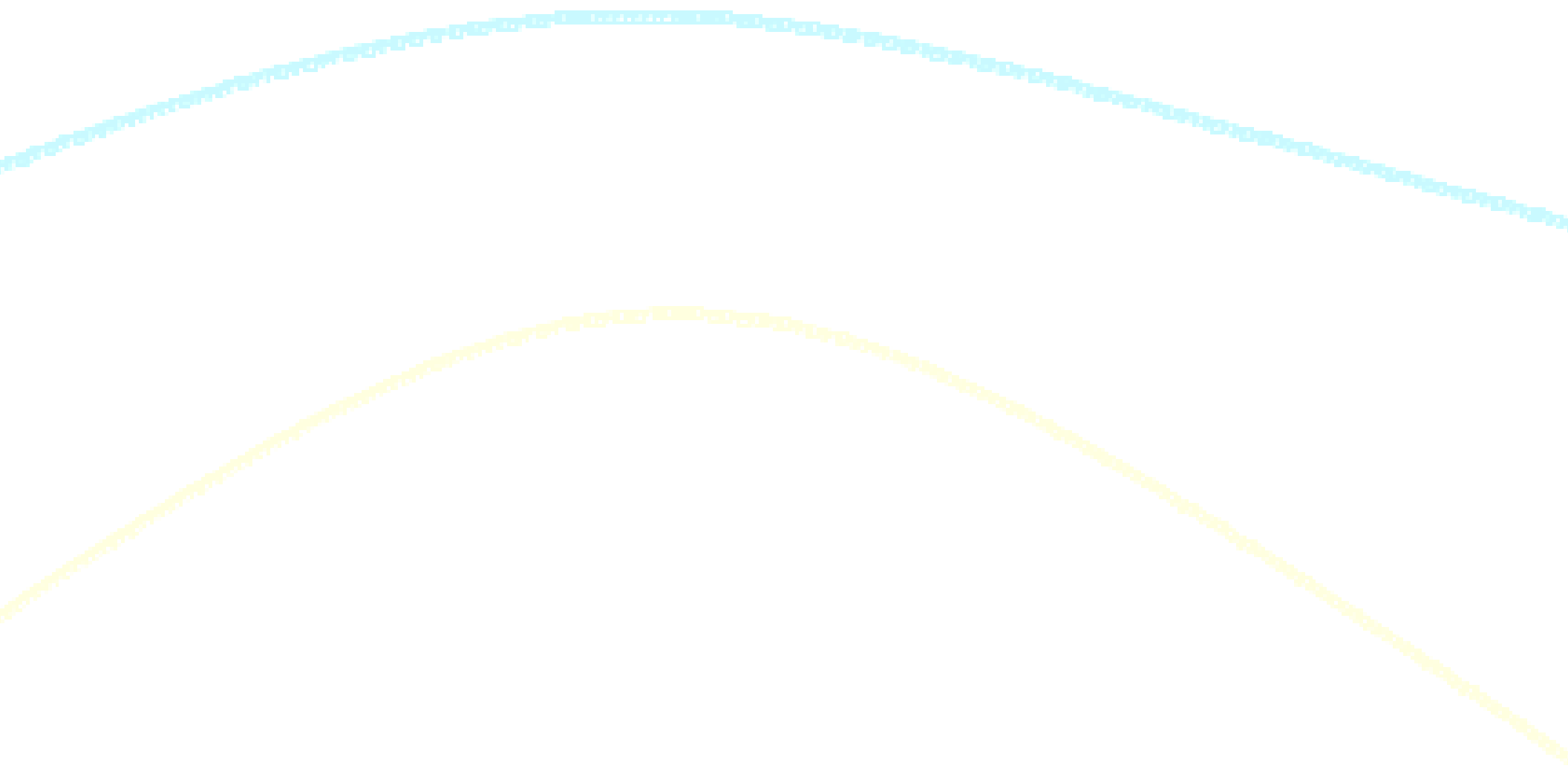


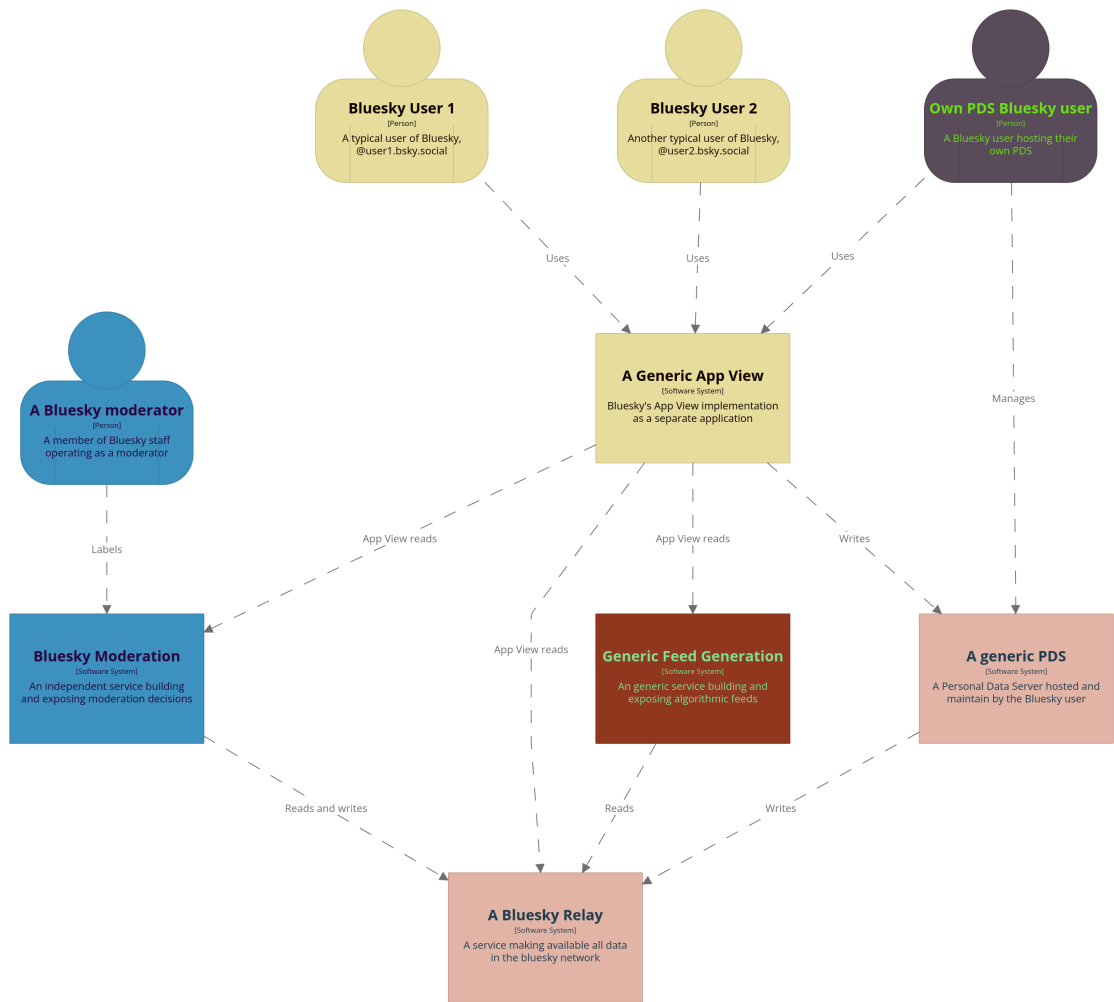




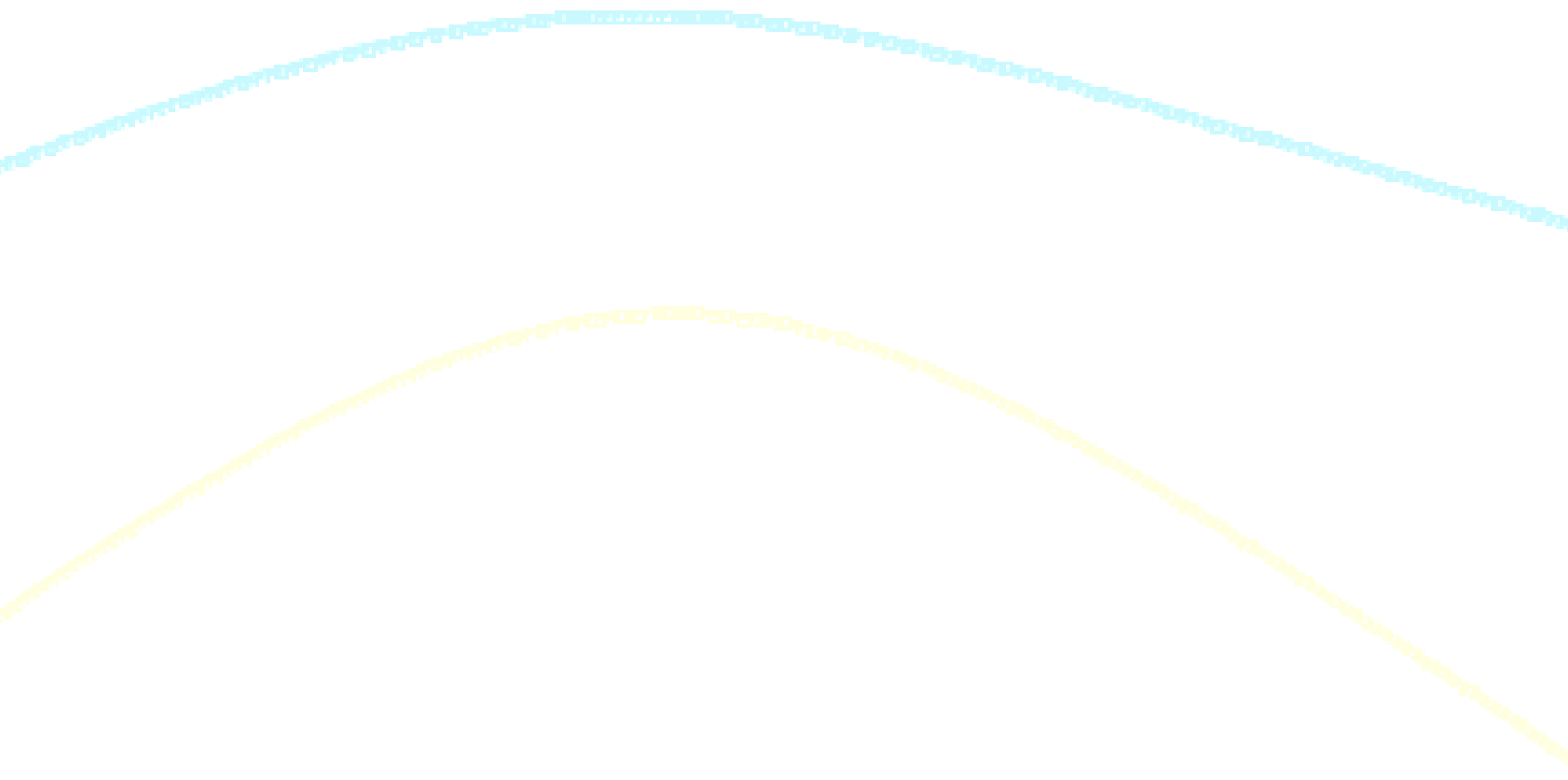
BLUESKY – MODERATION

BLUESKY MODERATION 1/2

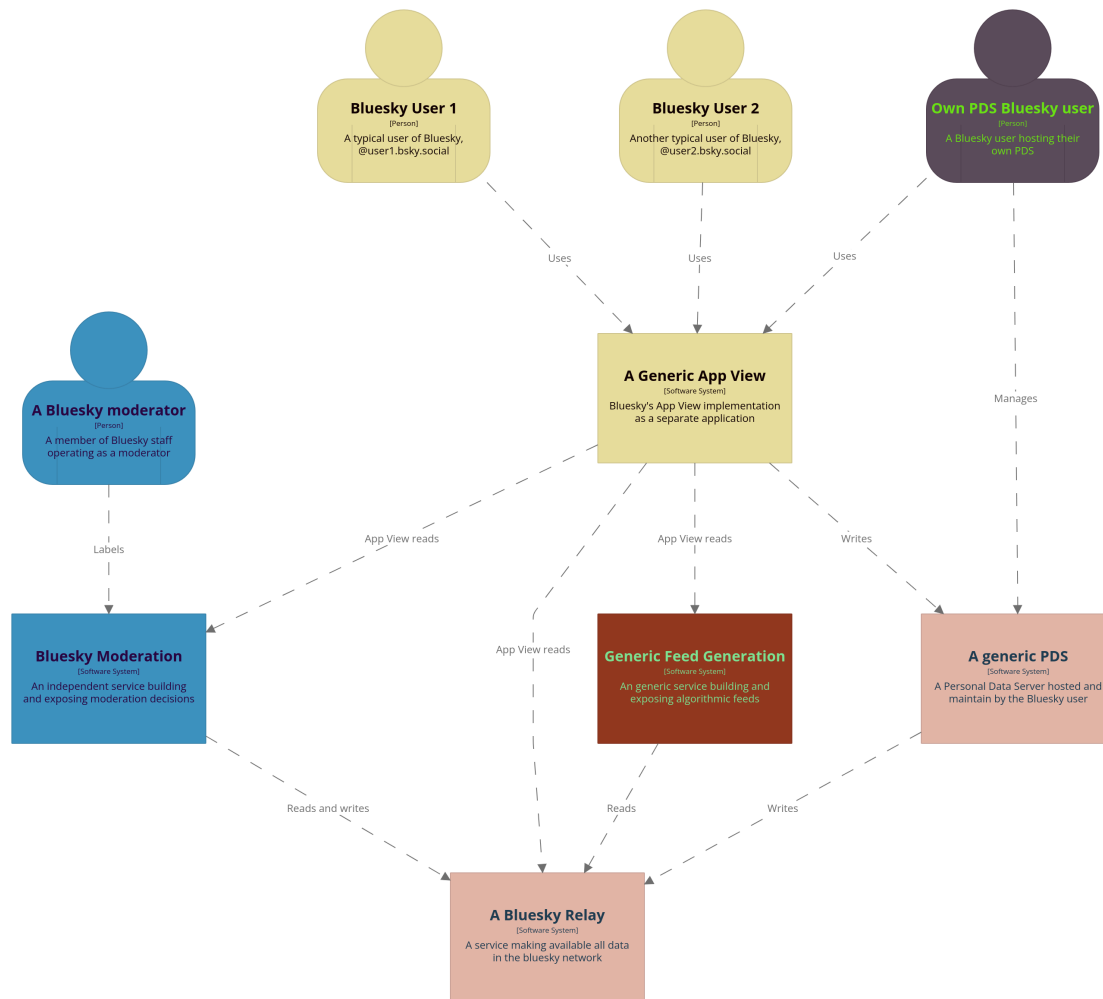




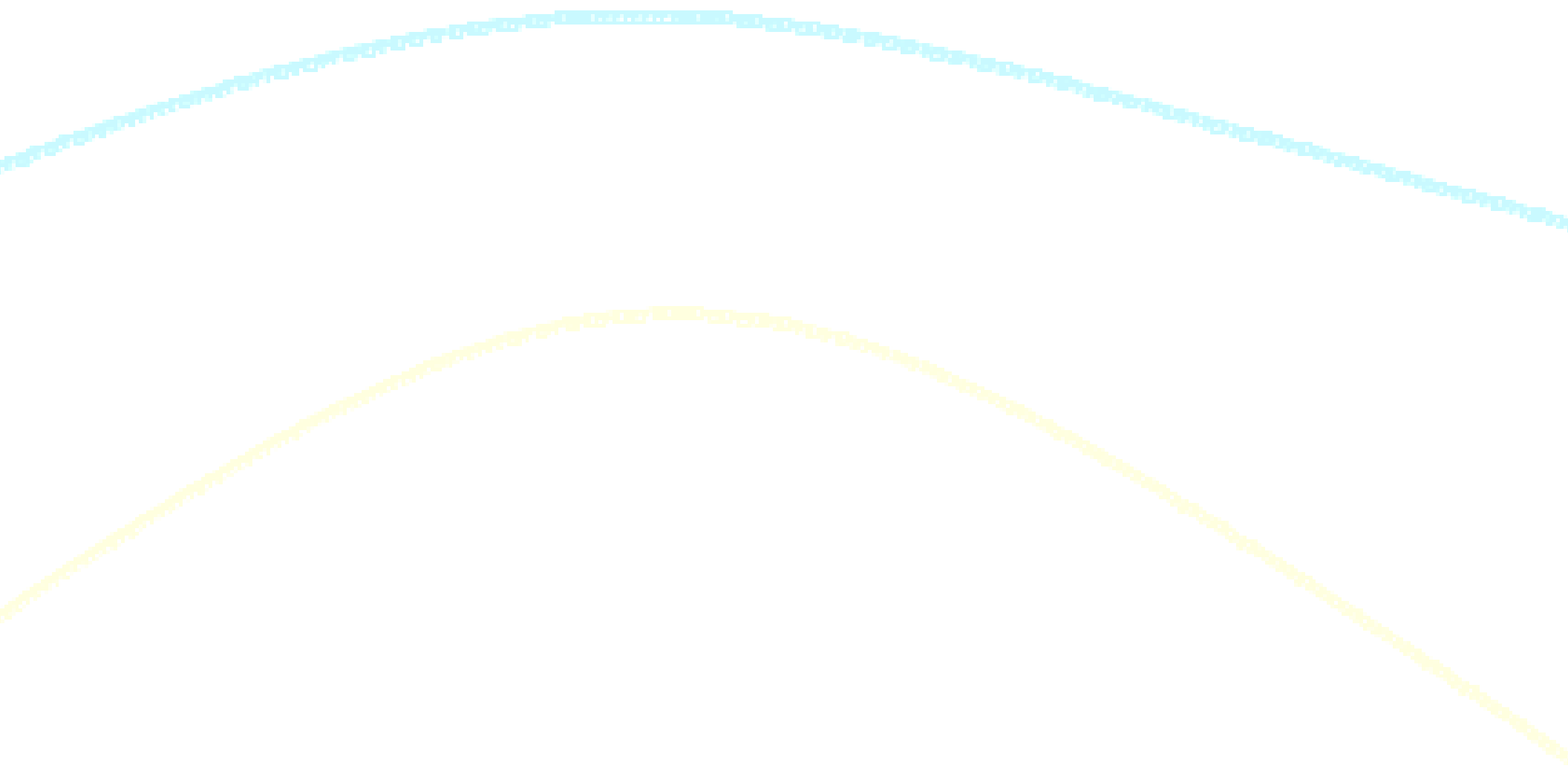
BLUESKY MODERATION 1/2



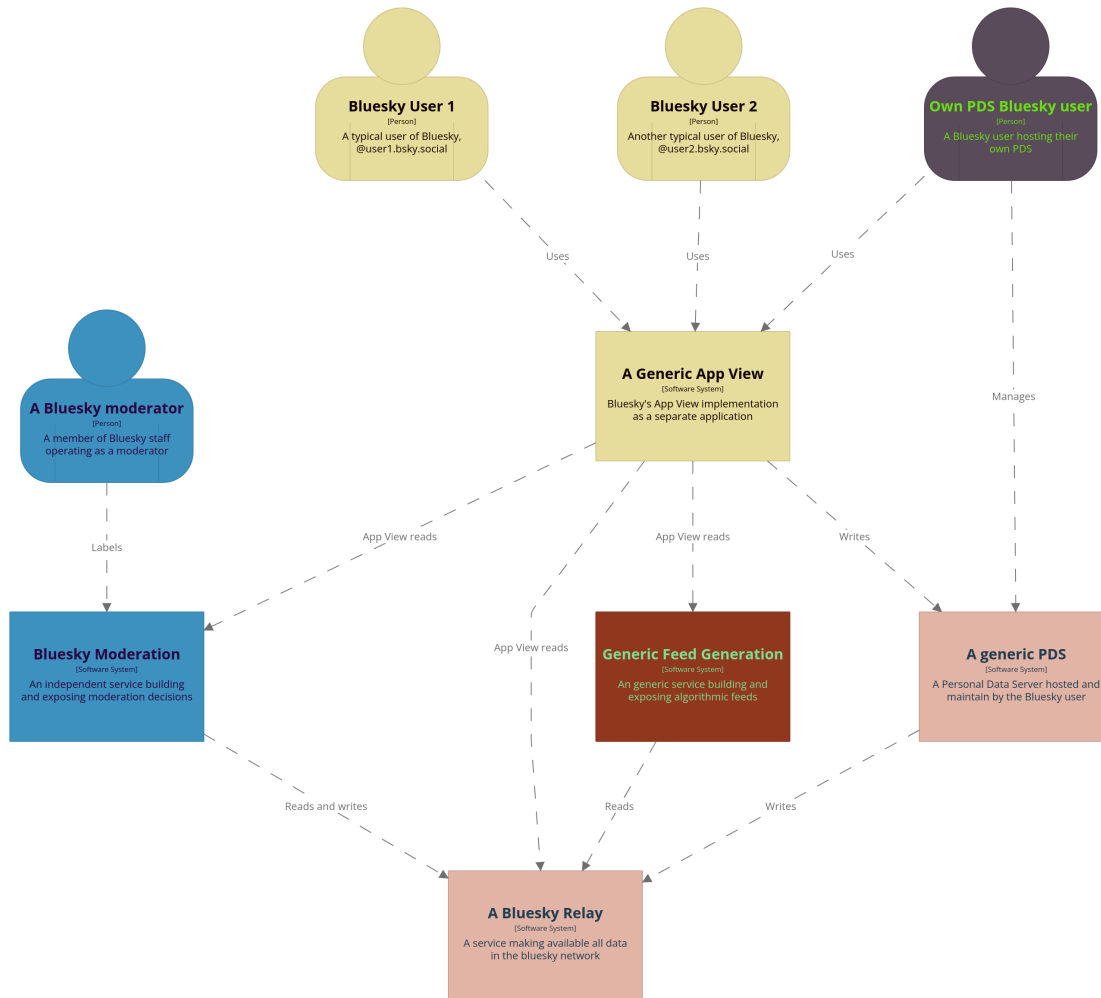
- Moderation separated out as a distinct service



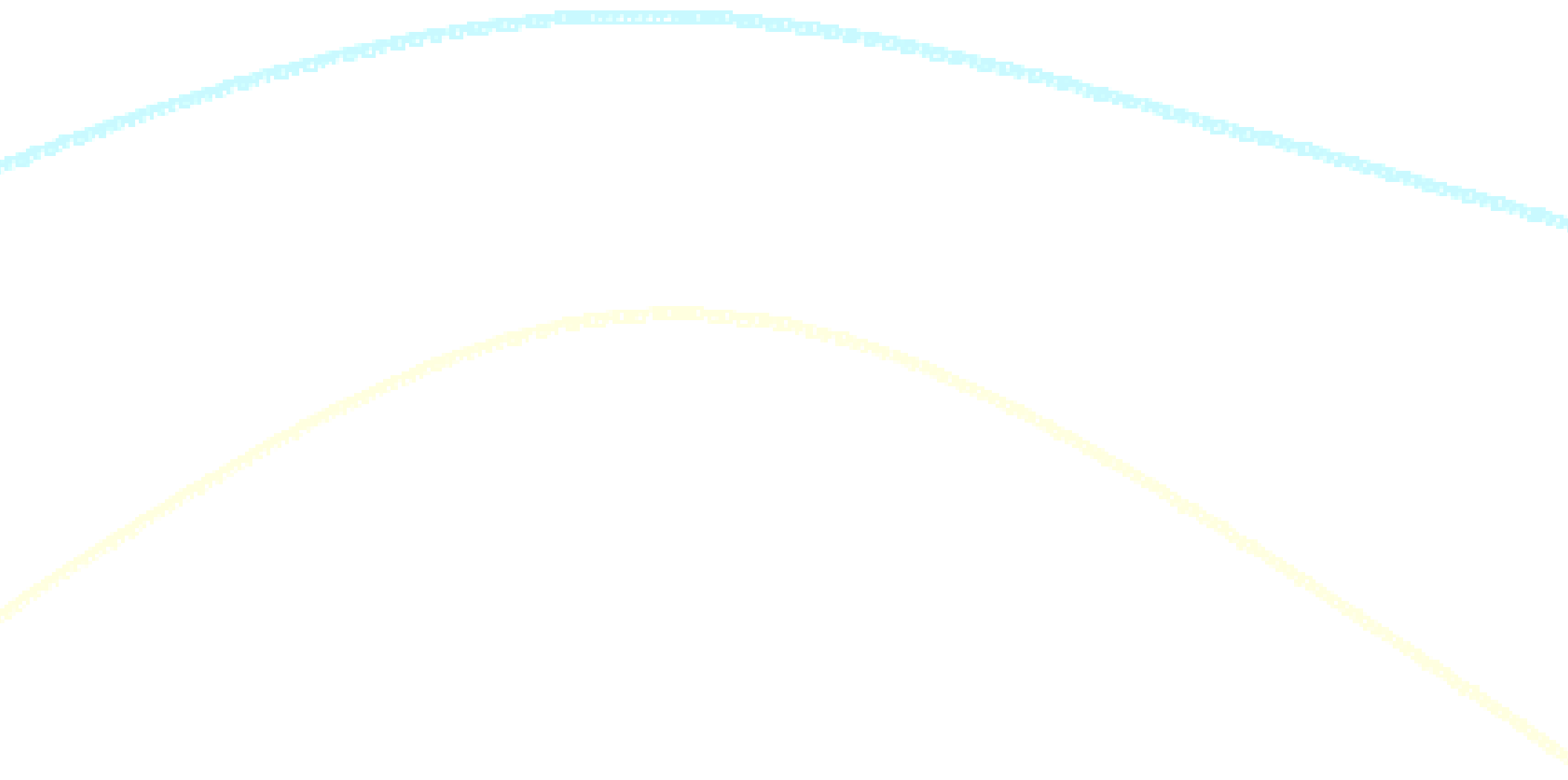
BLUESKY MODERATION 1/2

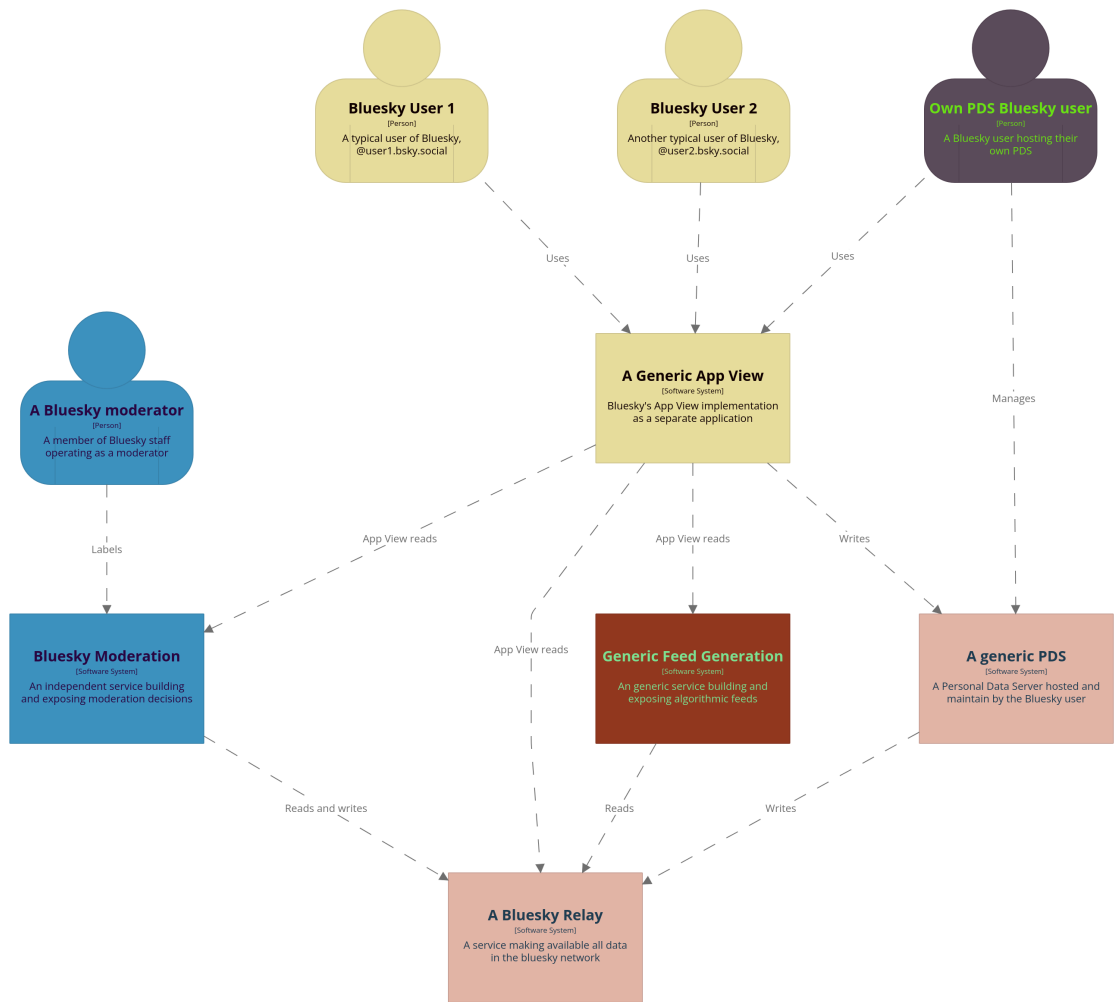


- Moderation separated out as a distinct service
- Moderation tooling reads from the Relay



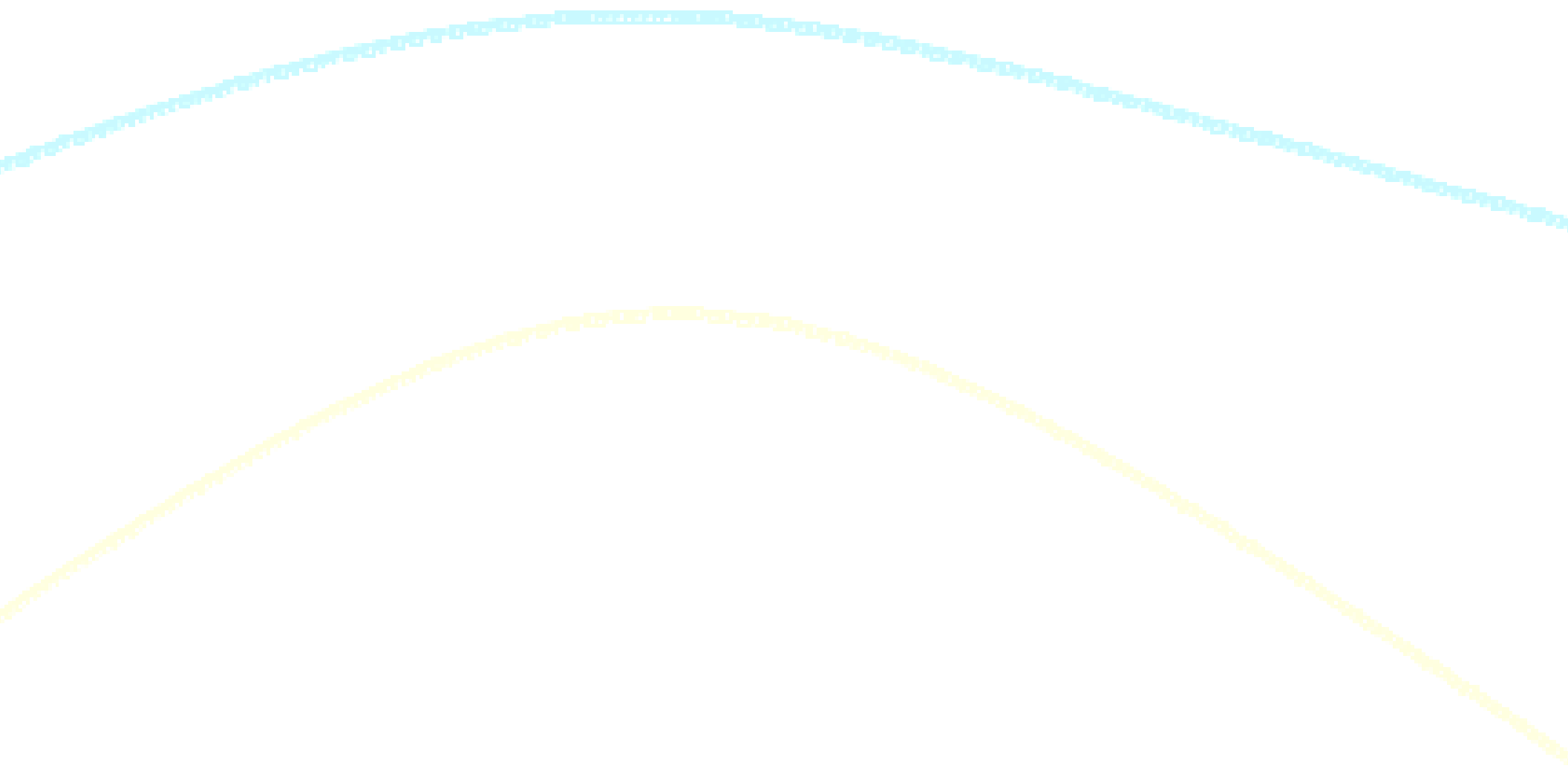
BLUESKY MODERATION 1/2

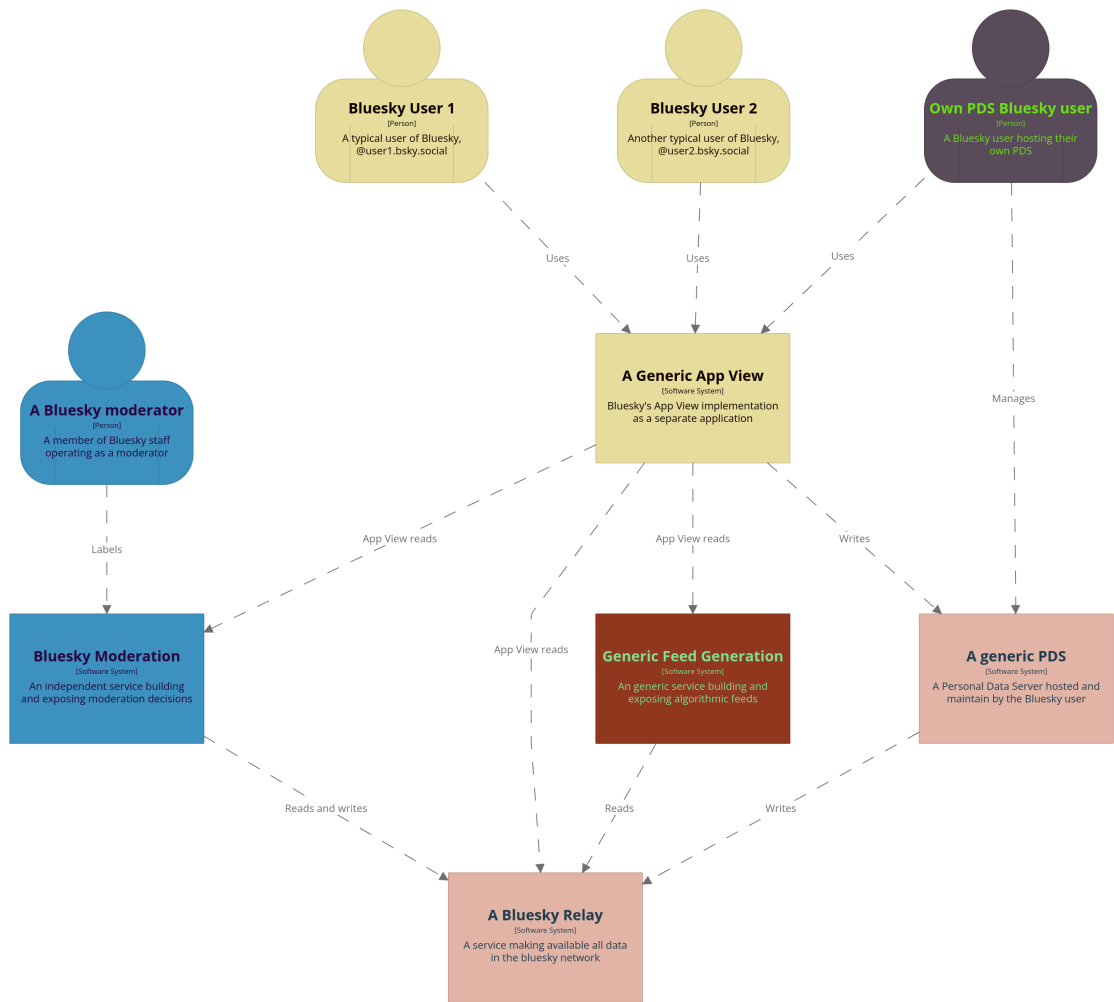




- Moderation separated out as a distinct service
- Moderation tooling reads from the Relay
- Bluesky maintains and operates the top-level moderation
 - Suppresses the really bad stuff, like illegal and abusive material
 - and really, really, really bad stuff like copyright infringement¹

BLUESKY MODERATION 1/2



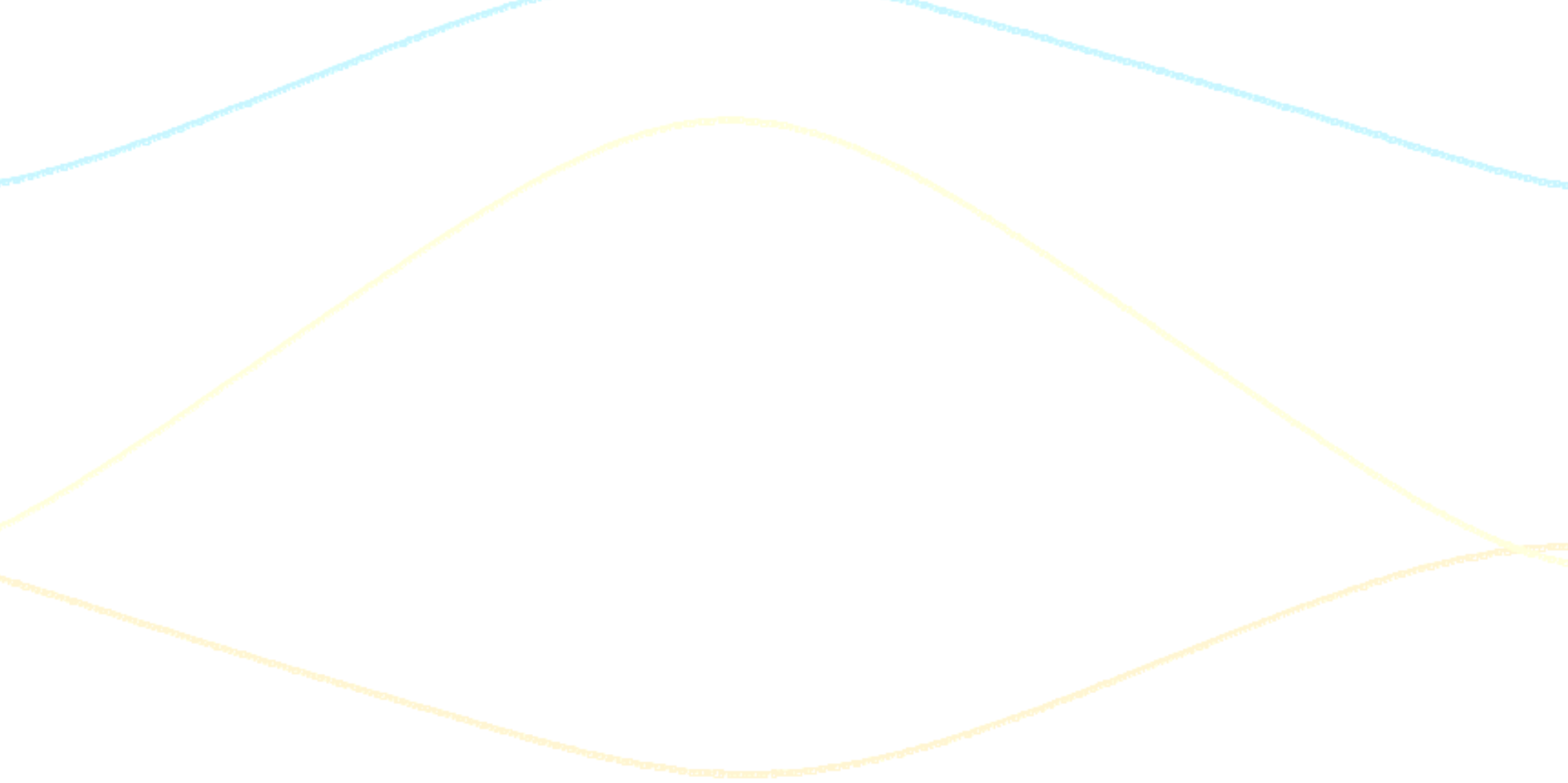


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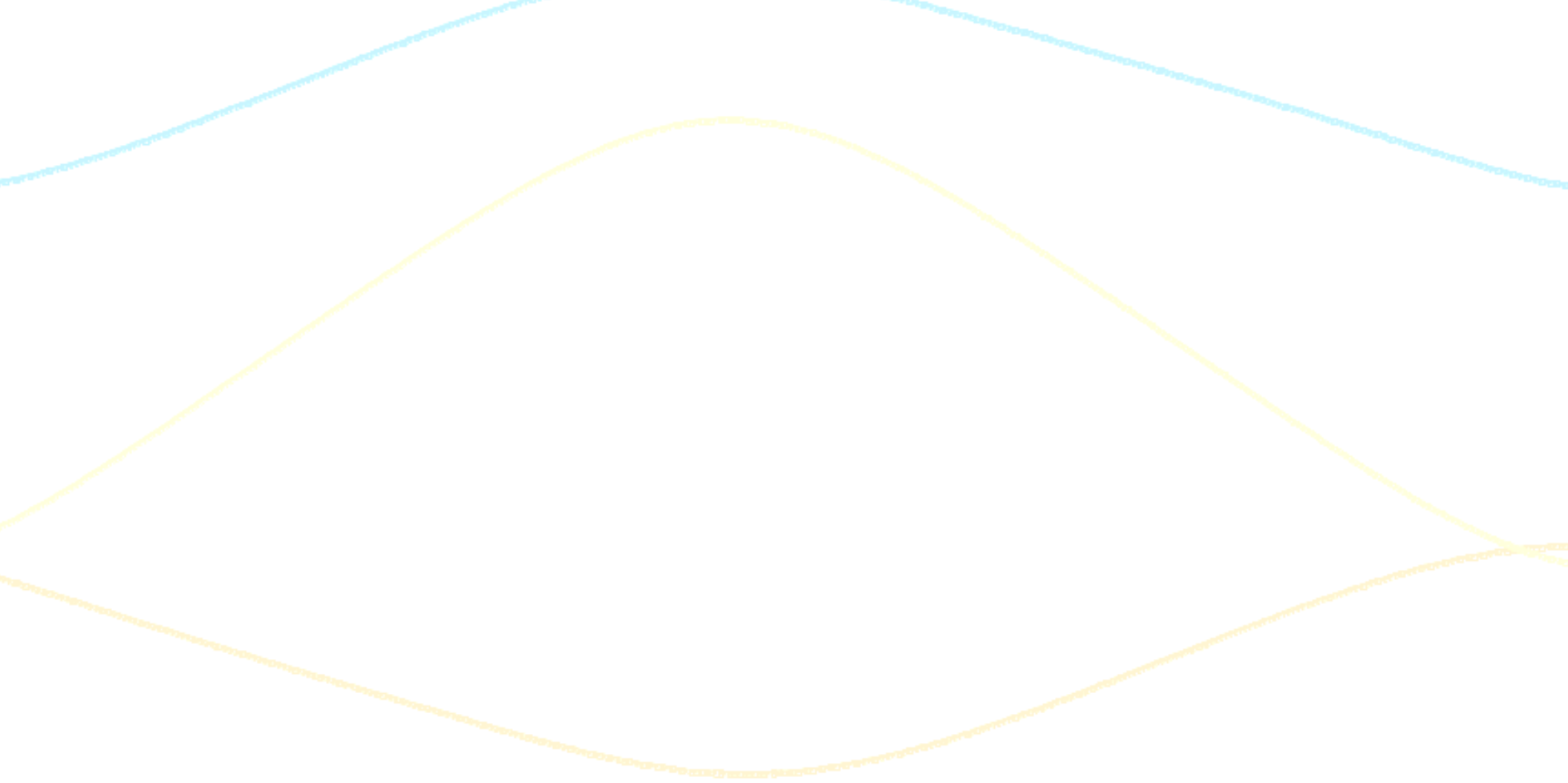
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- But separate moderation services can be implemented by 3rd parties

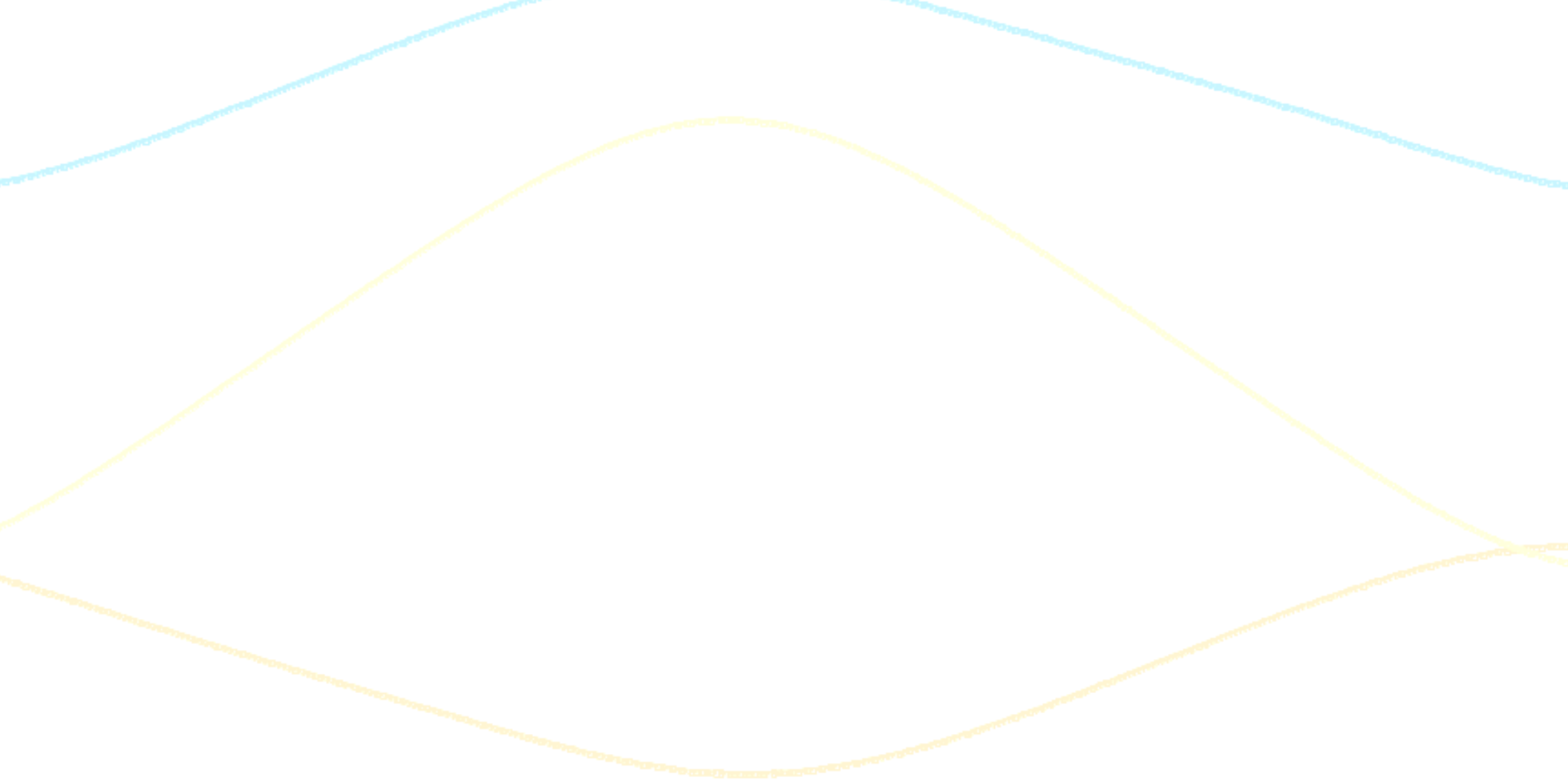
BLUESKY MODERATION 2/2 – A 3RD-PARTY INDEPENDENT MODERATION SERVICE



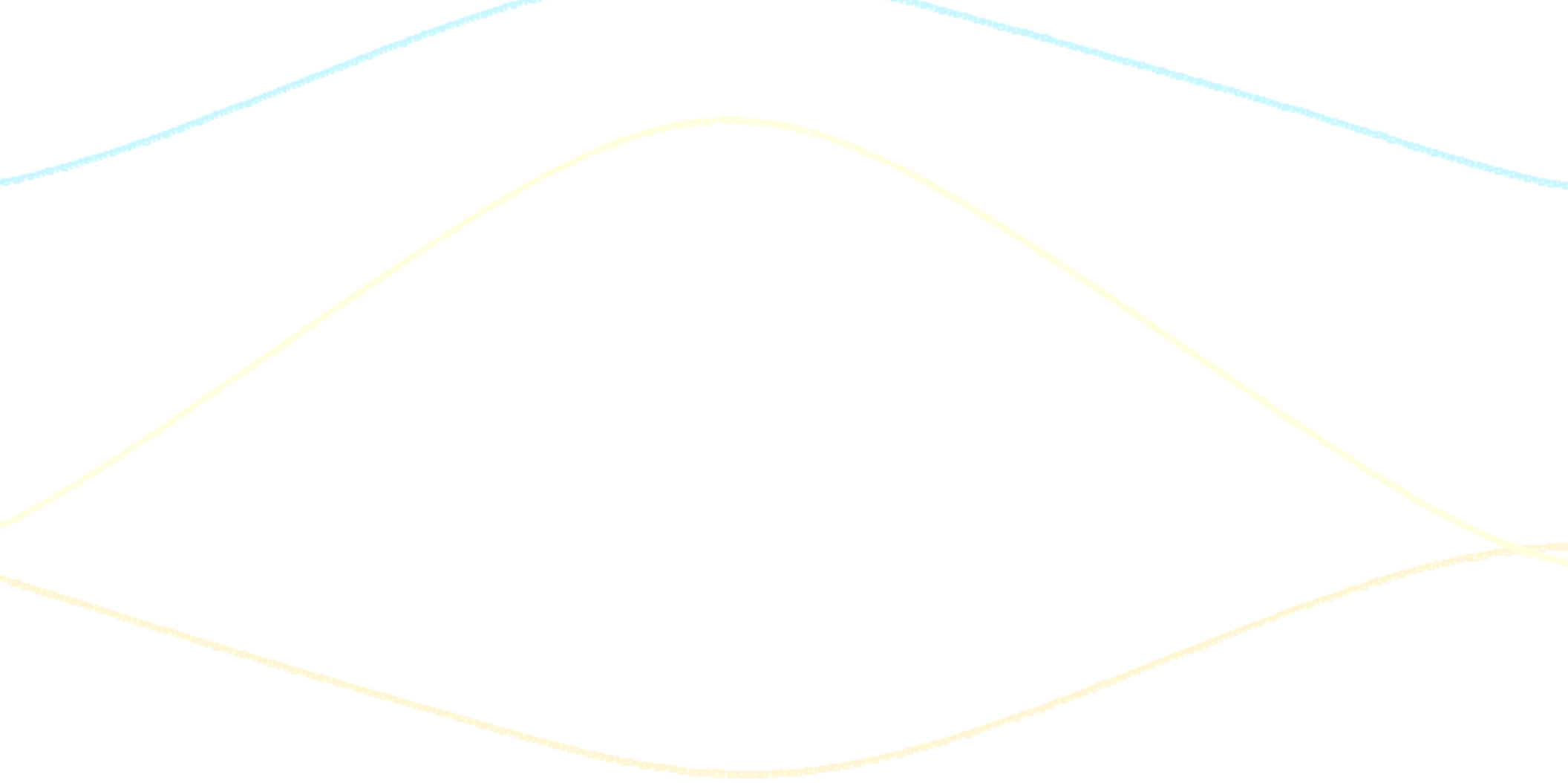
BLUESKY MODERATION 2/2 – A 3RD-PARTY INDEPENDENT MODERATION SERVICE



BLUESKY MODERATION 2/2 – A 3RD-PARTY INDEPENDENT MODERATION SERVICE



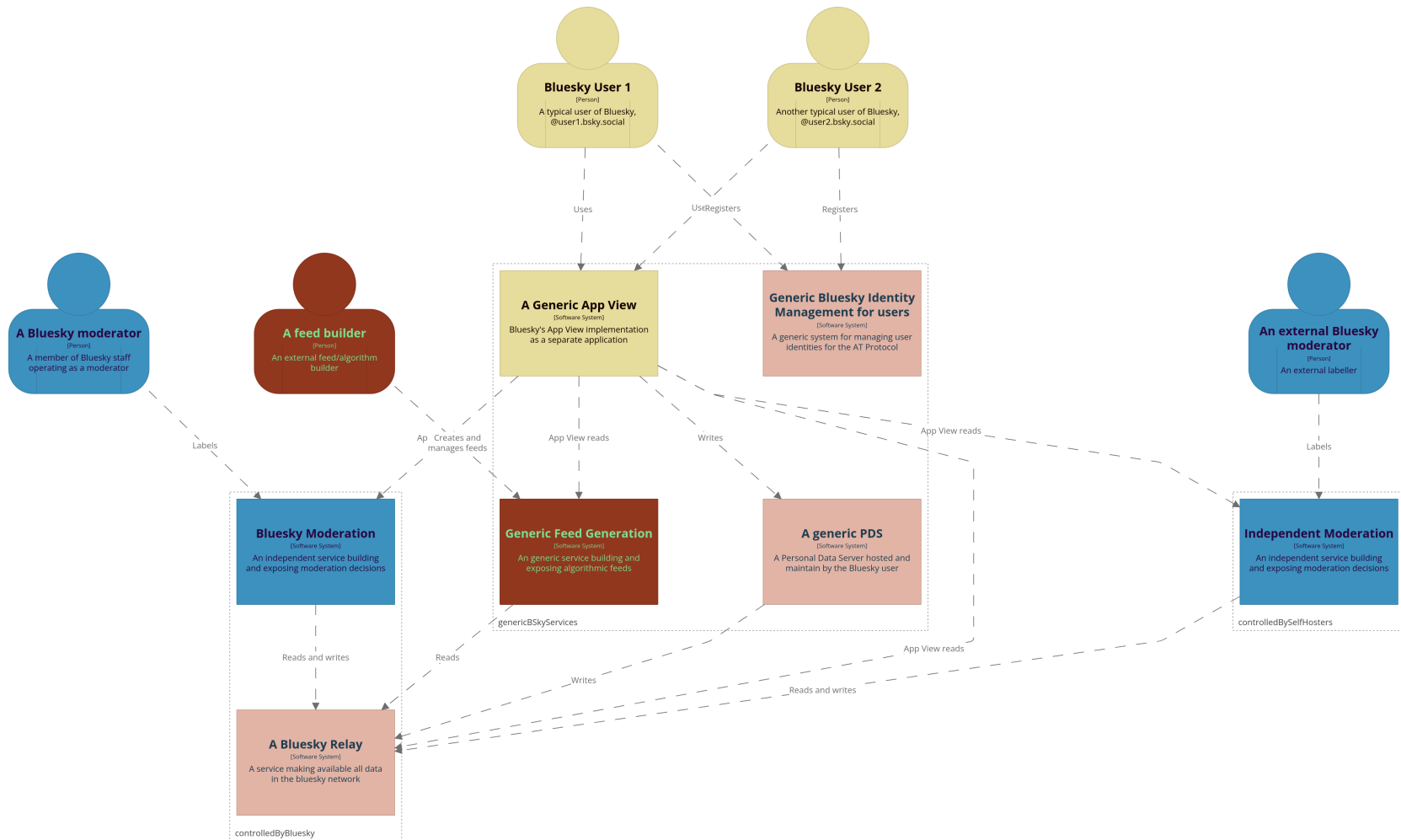
BLUESKY MODERATION 2/2 – A 3RD-PARTY INDEPENDENT MODERATION SERVICE

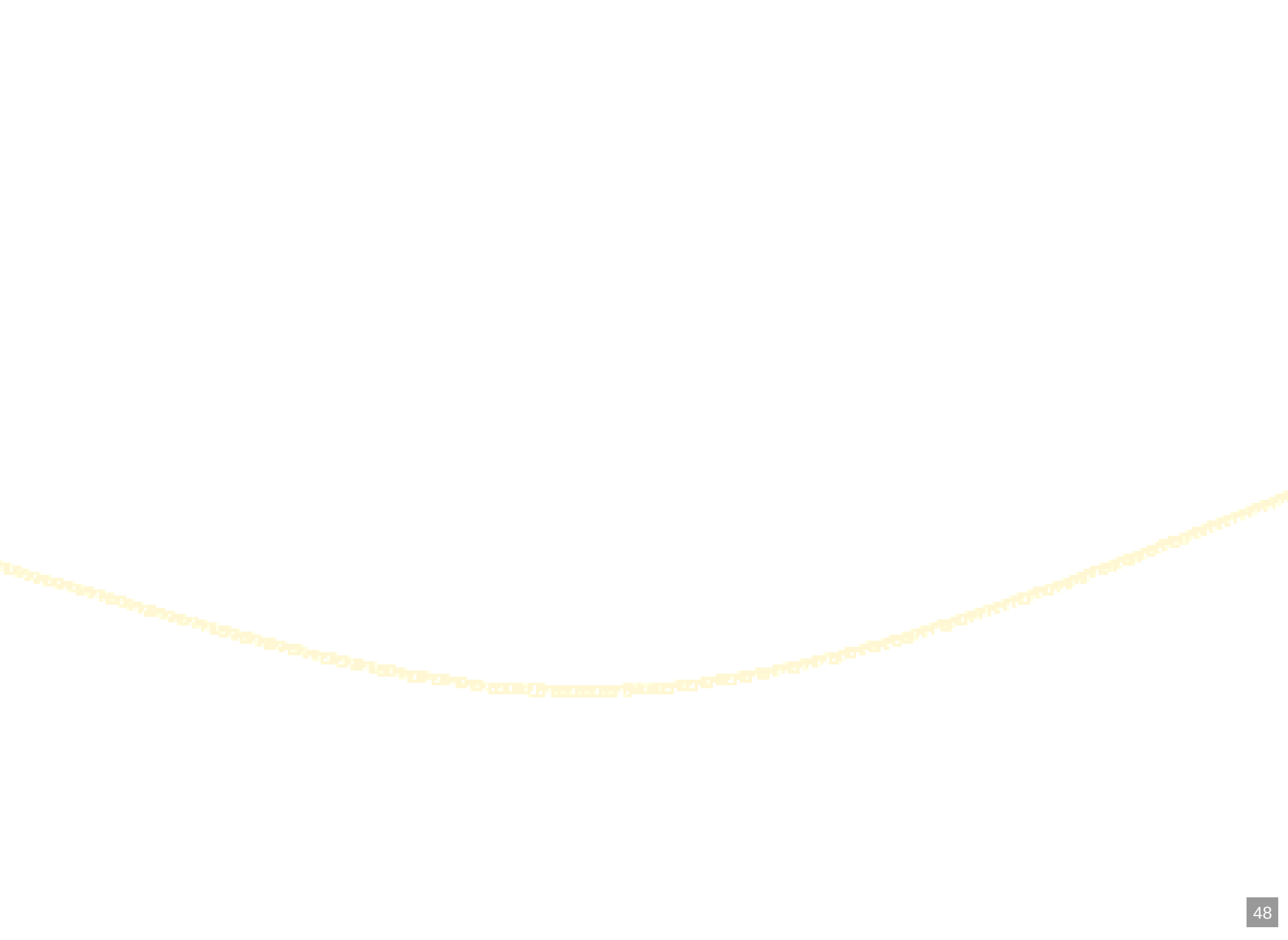




BLUESKY

BLUESKY – CURRENT ARCHITECTURE







BLUESKY – ROADMAP

Planned for 2024



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- Private/Direct messages (DMs)
 - E2E Encrypted
 - 1:1 initially, but group DMs planned



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 - short clips, 90s or so.
- Improved custom feeds
- Improved anti-harassment

BLUESKY – ROADMAP

Planned for 2024

- Private/Direct messages (DMs)
 - E2E Encrypted
 - 1:1 initially, but group DMs planned
- Video sharing
 - short clips, 90s or so.
- Improved custom feeds
- Improved anti-harassment
- OAuth – for allowing 3rd-party clients to authenticate without an application password

RESOURCES AND FURTHER READING

- Original *Protocols, Not Platforms: A Technological Approach to Free Speech* paper
- [Bluesky main page](#)
- The [ATProtocol](#) specification
- Bluesky [documentation and blogs](#)
- Bluesky's [github](#):
 - The `atproto`
 - [Ozone](#), stackable content moderation tooling.
 - Self-hosting a [PDS](#).
- [Community](#) (i.e. not governed by the Bluesky company) projects (tools, apps, bots, etc.)
- Original [source for this presentation](#)
 - Structurizr [DSL file](#)