

# Break the Messaging Silos with COI: Chat Over IMAP

[wiki.coi-dev.org](http://wiki.coi-dev.org)

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Stay Open. **OX**

# Who has an active email account?

Please raise your hand

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## The Hot New Channel for Reaching Real People: Email

Frustrated by social media, businesses and others looking for an audience turn to an old standby



By *Christopher Mims*

Jan. 19, 2019 12:00 a.m. ET

Kids think it's fussy and archaic, but for brands, creators and businesses of every kind the emerging medium of choice to reach audiences is the only guaranteed-delivery option the internet has left: email.

Consumer email services have been around for almost three decades, but to hear email's most ardent fans talk about it now, it's an undiscovered country too long neglected by those who could benefit from it the most. In the #deletefacebook era, it's become a way to fight back against the algorithms that try to dictate what...

# IMAP as a Chat Protocol

Seriously?

IMAP (and email, in general) is not designed for low latency, small data packet (chat-like) communication

There are protocols explicitly designed for chat. Why not use them?

**BUT...**



# IMAP (Email) as a Chat Protocol

It's the Network, baby

## NETWORK NETWORK NETWORK

- Ubiquitous – 3.8 billion unique active users
- System fully operational today!
- Thousands+ of people working on infrastructure everyday
- Well-known; stable; extensible (Internet Message Access Protocol)
- Built-in Abuse/Security
- Chat ID is not identifier, it's your **account**
- **Allow clients to innovate**, instead of efforts/waiting for critical network mass
- (FWIW: COI does not require IMAP – can be adapted to use other MUA APIs in the future)

# COI Now

## Client COI

- Use existing IMAP & SMTP Infrastructure
- COI Client Specification v1.0 draft open for review  
[wiki.coi-dev.org](http://wiki.coi-dev.org)



# Client Spec Design Considerations

## Goal: Open Standards

- Use existing standards like
  - VCARD for contact information,
  - Disposition Notification Reports for read receipts
  - Attachments for structured JSON data

## Goal: Backwards Compatibility

- Always have something to show
  - text/plain, or text/html, or binary part like image/jpeg
- Keep it simple for existing clients
  - Change group name in subject
  - Change group definition with "To" or "CC"

## Goal: Secure Messaging

- Allow any encryption mechanism

## Goal: Modern User Experience

- Block users
- Edit & delete sent messages
- Sync contacts across devices

# 1:1 Message

From: Me Myself <me@sample.com>  
To: You <you@recipientdomain.com>  
Subject: Chat 2019-02-03 11:05  
Date: Sun, 3 Feb 2019 11:05:37 +0100  
Content-Type: text/plain; charset=UTF-8  
MIME-Version: 1.0  
Disposition-Notification-To: Me Myself <me@sample.com>  
Message-ID: <coi\$S2571BC.2878&8@sample.com>  
Chat-Version: 1.0

Hello World



# Group Message

From: Me Myself <me@sample.com>  
To: alice@example.com, bob@example.com  
Date: Mon, 4 Dec 2019 15:51:37 +0100  
Content-Type: text/plain; charset=UTF-8  
MIME-Version: 1.0  
Disposition-Notification-To: Me Myself <me@sample.com>  
Message-ID: <coi\$group.4321dcba1234.434571BC.S2571BC.2878&8@sample.com>  
Chat-Version: 1.0  
Subject: COI at FOSDEM

Hi gang, hope you're doing fine!

# Edit Message

From: Me Myself <me@sample.com>  
To: You <you@recipientdomain.com>  
BCC: Me Myself <me@sample.com>  
Subject: Chat: My dear friend...  
Date: Mon, 4 Dec 2019 15:51:37 +0100  
Message-ID: <coi\$S232371BC.2232&8@sample.com>  
Content-Type: text/plain; charset=UTF-8  
Reference: <coi\$434571BC.89A707D2@sample.com>  
Chat-Version: 1.0  
MIME-Version: 1.0  
Chat-Content: edit  
In-Reply-To: <coi\$S2571BC.2878&8@sample.com>

Hey, this message is now edited!

# Poor Man's Address Book (1/2)

## Cross Device Syncing

```
From: Simon Tester <simon@coi-dev.org>
To: alice@example.com
COI-Token: 1-tbudgBSg+bHWHIhNteNzN8TuvI80ygS9IULh4rkIEw--Js0c9gM0xZITMWGBQhPwiATiX0iPKRy40w1SmZnZu2k--5c4f90a2-1e13380
Subject: Chat: Contact
Date: Mon, 4 Dec 2019 15:37:0100
Message-ID: <coi$232888.2323@sample.com>
Chat-Version: 1.0
Content-Type: multipart/mixed;
boundary="RAA14128.773615765/recipientdomain.com"
MIME-Version: 1.0
```

```
--RAA14128.773615765/recipientdomain.com
Content-Type: text/plain
Content-Disposition: inline
```

This message contains a contact, do not delete.

```
--RAA14128.773615765/recipientdomain.com
Content-Type: application/json; charset=UTF-8
Content-Disposition: attachment;
filename="contact.json"
Chat-Content: contact
```

```
{
  "coi-version": 1,
  "content": "contact",
  "is_me": false,
  "is_visible": true,
  "status": "idling around...",
  "groups": ["friends", "favorite"],
  "last_time_contact_sent": "Sun, 3 Dec 2019 20:53:37 +0100",
  "notification": {
    "enabled": true,
    "types": ["banner", "sound"],
    "sound": "friend"
  }
}
```

```
--RAA14128.773615765/recipientdomain.com
Content-Type: text/vcard; charset=UTF-8
Content-Disposition: attachment;
filename="contact.vcf"
```

```
BEGIN:VCARD
VERSION:4.0
EMAIL:TYPE=work:stester@coi-dev.org
EMAIL:PREF=1:simon@coi.me
FN:Simon Tester
N:Tester;Simon;;ing,jr,M.Sc.
BDAY:--0203
ANNIVERSARY:20090808T1430-0500
GENDER:M
LANG:PREF=1:fr
PHOTO:data:image/jpeg;base64,MIIcAjCCAdOgAwIBAgICBEUwDOYJKoZihv
AQEEBQAwZdZELMAkGA1UEBhMCVVMxLDAqBgNVBAoTIO5ldHNjYXBIIENvbW11bm
IjYXRpb25zIENvcnBvcnF0aW9uMRwwGgYDVQQLExNjbmZvcmlhdGlvbiBTeXN0
<...remainder of base64-encoded data...>
END:VCARD
```

```
--RAA14128.773615765/recipientdomain.com--
```

Content-Type: application/json; charset=UTF-8  
Content-Disposition: attachment;  
filename="contact.json"  
Chat-Content: contact

```
{
  "coi-version": 1,
  "content": "contact",
  "is_me": false,
  "is_visible": true,
  "status": "idling around...",
  "groups": ["friends", "favorite"],
  "notification": {
    "enabled": true,
    "types": ["banner", "sound"],
    "sound": "friend"
  }
}
```

# Poor Man's Address Book (2/2)

## Cross Device Syncing

```
From: Simon Tester <simon@coi-dev.org>
To: alice@example.com
COI-Token: 1-tbudgBSg+bHWHlHnNzN8TUVI80ygS9IULh4rkIEw--Js0c9gM0xZITMWGBQhPwiATiX0iPKRy40w1SmZnZu2k--5c4f90a2-1e13380
Subject: Chat: Contact
Date: Mon, 4 Dec 2019 15:51:37 +0100
Message-ID: <coi$232888.2323@sample.com>
Chat-Version: 1.0
Content-Type: multipart/mixed;
boundary="RAA14128.773615765/recipientdomain.com"
MIME-Version: 1.0
```

```
--RAA14128.773615765/recipientdomain.com
Content-Type: text/plain
Content-Disposition: inline
```

This message contains a contact, do not delete.

```
--RAA14128.773615765/recipientdomain.com
Content-Type: application/json; charset=UTF-8
Content-Disposition: attachment;
filename="contact.json"
Chat-Content: contact
```

```
{
  "coi-version": 1,
  "content": "contact",
  "is_me": false,
  "is_visible": true,
  "status": "fiding around...",
  "groups": ["friends", "favorite"],
  "last_time_contact_sent": "Sun, 3 Dec 2019 20:53:37 +0100",
  "notification": {
    "enabled": true,
    "types": ["banner", "sound"],
    "sound": "friend"
  }
}
```

```
--RAA14128.773615765/recipientdomain.com
Content-Type: text/vcard; charset=UTF-8
Content-Disposition: attachment;
filename="contact.vcf"
```

```
BEGIN:VCARD
VERSION:4.0
EMAIL;TYPE=work:stester@coi-dev.org
EMAIL;PREF=1:simon@coi.me
FN:Simon Tester
N:Tester;Simon;;;ing. jr,M.Sc.
BDAY:--0203
ANNIVERSARY:20090808T1430-0500
GENDER:M
LANG:PREF=1:fr
PHOTO:data:image/jpeg;base64,MlICajCCAd0gAwlBAglCBEUwDQYJKoZIh
vAQEEOAwzdELMAkGA1UEBhMCVVMxLDAqBgNVBAoTIO5ldHNjYXBIIENvbW11bm
IjYXRpb25zIENvcnBvcnF0aW9uMRwwGgYDVQQLExNjbmZvcmlhdGlvbiBTeXN0
<...remainder of base64-encoded data...>
END:VCARD
```

```
--RAA14128.773615765/recipientdomain.com--
```

Content-Type: text/vcard; charset=UTF-8  
Content-Disposition: attachment;  
filename="contact.vcf"

BEGIN:VCARD  
VERSION:4.0  
EMAIL;TYPE=work:stester@coi-dev.org  
EMAIL;PREF=1:simon@coi.me  
FN:Simon Tester  
N:Tester;Simon;;;ing. jr,M.Sc.  
BDAY:--0203  
ANNIVERSARY:20090808T1430-0500  
GENDER:M  
LANG;PREF=1:fr  
PHOTO:data:image/jpeg;base64,MlICajCCAd0gAwlBAglCBEUwDQYJ  
KoZIhV <...remainder of base64-encoded data...>  
END:VCARD

# COI Soon

## Server & Client COI

- Server differentiates between email and chat messages
- Server support for blocking users
- Push notifications
- Support for WebRTC audio and video-calls
- Create & manage channels
- Direct message submission





How can we  
Innovate?





# Solve General Email Problems

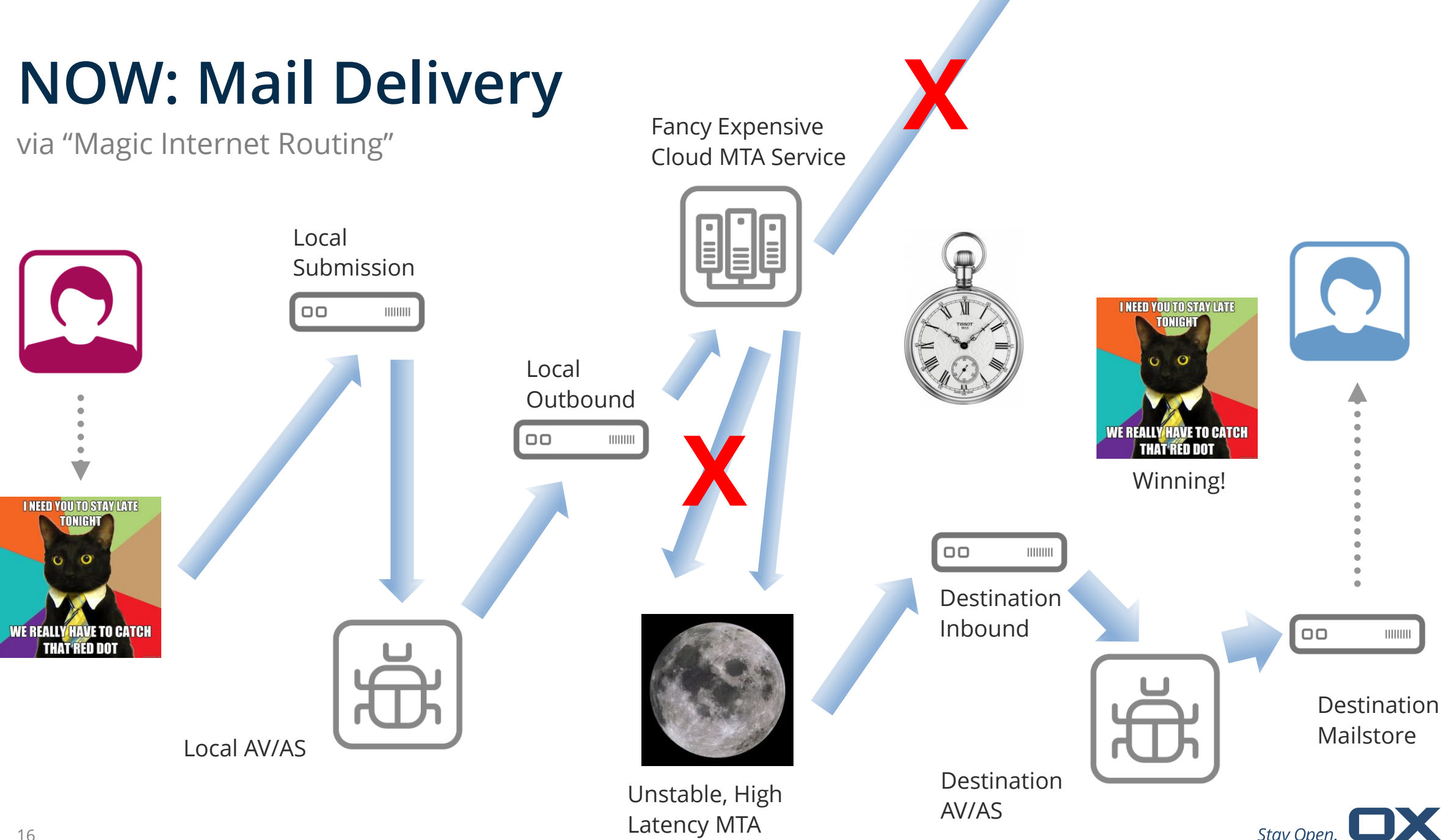
Don't focus just on project goals; think bigger!



- Problem: Email delivery can be high latency
- Idea: Develop secure way to decrease delivery times for trusted users
- Solution: **Direct Message Submission**
- NOT tied to COI – any email user can potentially benefit

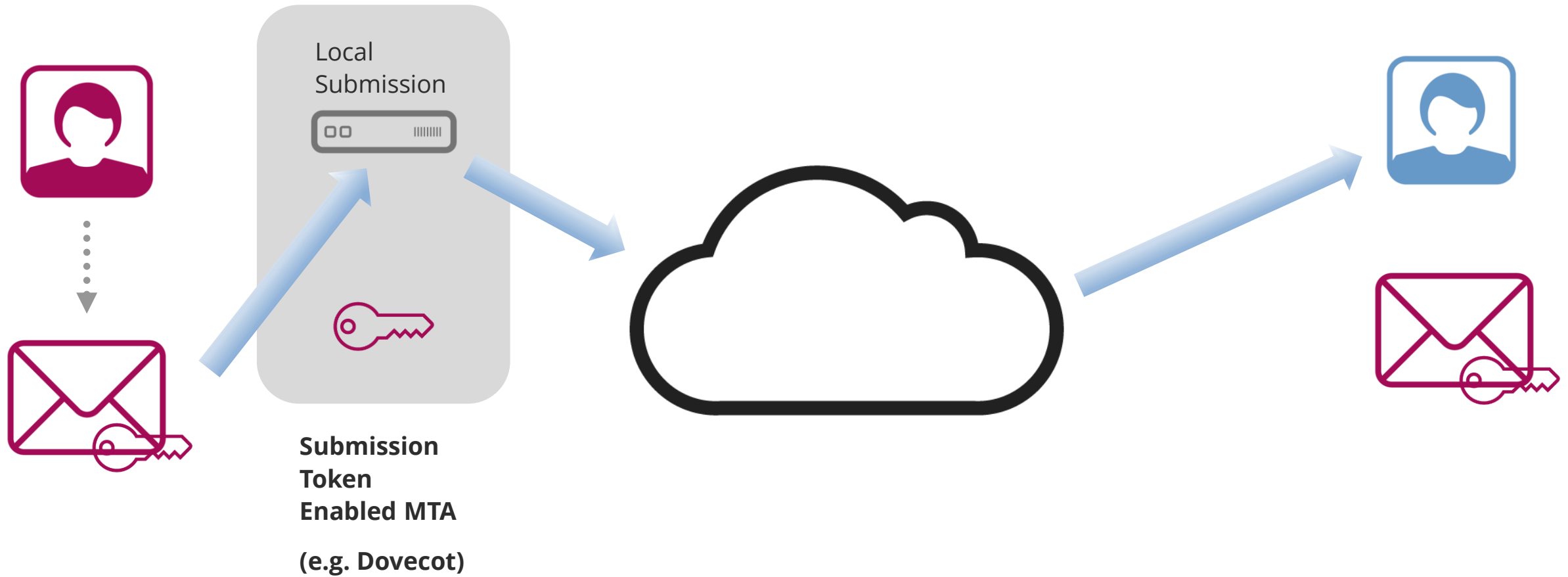
# NOW: Mail Delivery

via "Magic Internet Routing"



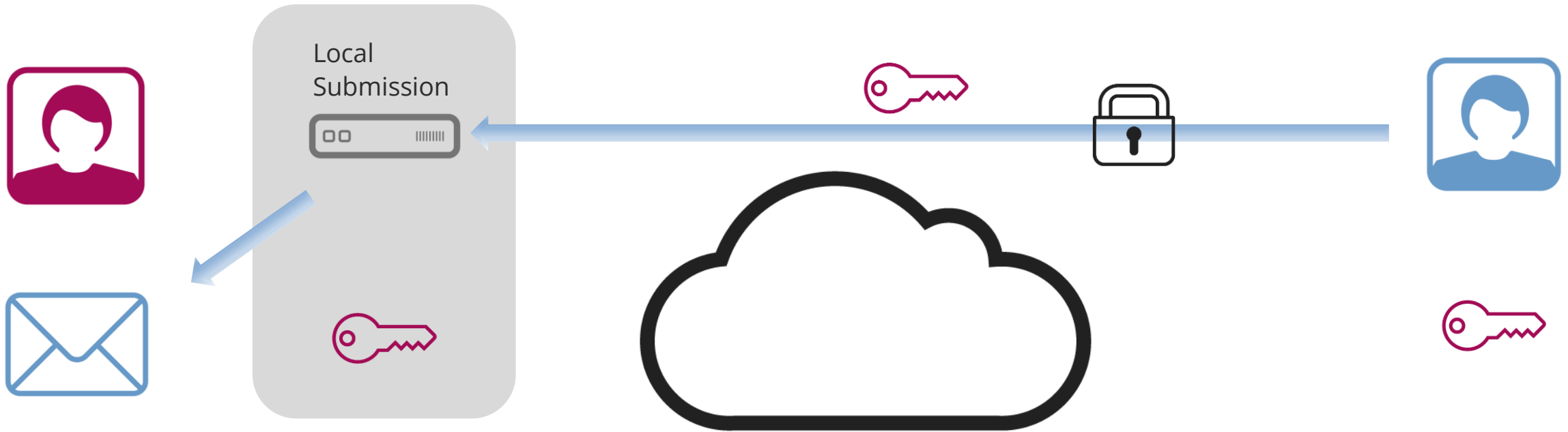
# Soon: Submission Token

Distribution



# Soon: Submission Token

## Usage



Submission  
Token  
Enabled MTA  
(e.g. Dovecot)

- Transparent to end users
- Can be supported (unidirectionally) by client
- Mail API agnostic – this is SMTP extension, not IMAP



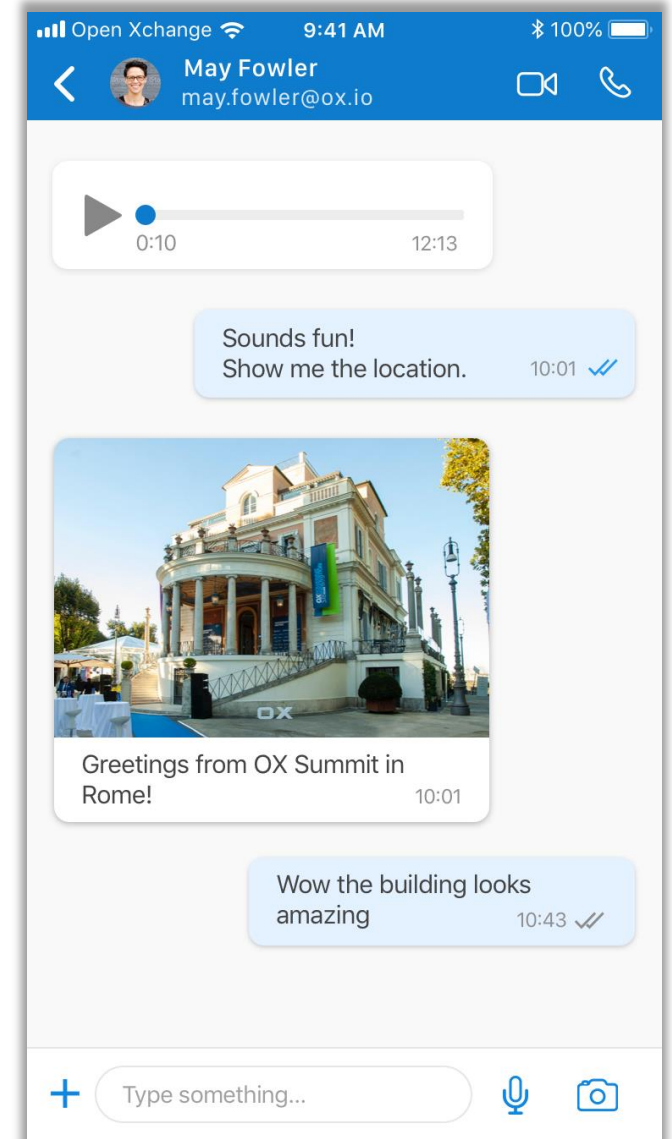
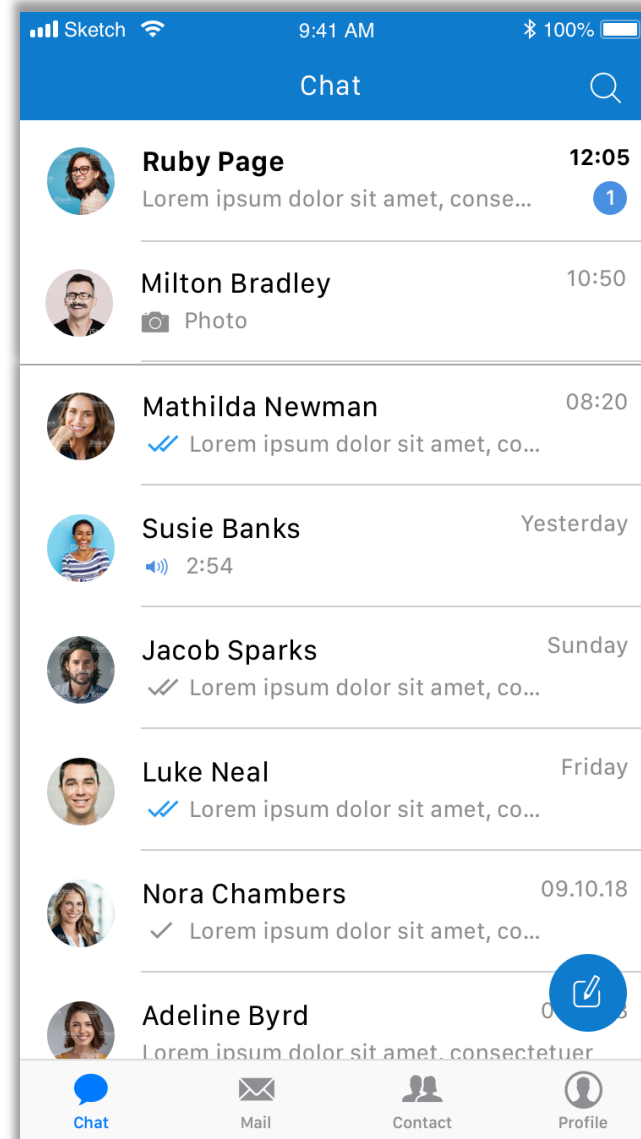
# Back to the Present



# OX Talk App

Mobile chat & mail

- MPL license
- Based on Flutter.io
- [github.com/open-xchange/ox-talk](https://github.com/open-xchange/ox-talk)





# Partners

Establishing an ecosystem

## Delta Chat

- Open source IMAP based messenger
- We cooperate on interoperability
- <https://delta.chat>



## Spike

- Conversational email experience
- Will support COI in the future
- <https://www.spikenow.com/>



## Your Client or Your Email Server ?!

- Welcome aboard!

COI is an **open ecosystem**

# Why Should I Support / Use COI?

## For Developers

COI is the only ecosystem that provides openness, a strong messaging basis AND that overcomes the network effect.

**COI is a base to realize your own unique ideas.**

Thanks to Delta Chat Core, as a client developer you do not even need to deal with IMAP directly.

## For Privacy Advocates

Only open AND federated systems like COI provide you the freedom to select your preferred app and provider – or even let you host it yourself.

GPG encryption ensures pragmatic, cross device privacy.

## For End-Users

- Choice of multiple apps
- Central place for all messaging activity
- Trust

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[github.com/open-xchange/ox-talk](https://github.com/open-xchange/ox-talk)

*Stay Open.* **OX**

