The Relay Project

The Relay Project is a first-of-its-kind community-owned Social Network & Instant Messenger powered by **blockchain technology**. Utilizing PGP Encryption & WebRTC technology, and driven by Community Source Principles, Relay offers a **public alternative** to the many emerging social media challenges brought about by a growing lack of private sector accountability and an increasingly singular user-experience.

Relay is **non-profit** with the goal of providing end-users with a true **permanent personal security** and **internet freedom** they can rely on, *forever*. The Relay Team believes end-users deserve direct access to client-stored keypair encryption and the unlimited power and potential of BlockChain technology. With Relay, average and veteran users alike will feel **empowered** by their ability to edit and contribute to any element of their internet experience directly.

Relay goes a *different way*. Harnessing the power of the online community, Relay gives a people's alternative to the brand-focused software industry and privatized software services they've come to know. By *encrypting* sensitive **personal data** and securing it locally, *never on* centralized cloud servers, Relay gives the **keys** directly to the end-user:

- Backup and protect your **Private Key**. It secures all your blockchain data. For your eyes only!
- With the **Blockchain**, data leaks, 3rd party mining, and unauthorized surveillance become **impossible**.
- Build your **Public Key Reputation** and help resolve conflicts between community members.
- Never have to depend on the private sector to keep your published/sensitive data safe again.

Software Resiliency Comparison Chart - *The Relay Project* -		**Relay**	Facebook	Twitter	Slack	Instagram	Google Plus	Skype	SnapChat	WhatsApp	CryptoCat	Minds	Datt	IRC	
Encryption	Key-pair encryption	✓	X	X	✓	X	X	X	✓[6]	✓[6]	✓	✓	✓	✓	*Client-Side end-to-end* ***encryption*** *provides complete data privacy. Public Keys provide a way to verify data published by an Identity.*
	Public key identity	✓	X	X	X	X	X	X	X	X	X	X	X	X	
	Client-side keys [1]	✓	X	X	X	X	X	X	X	X	✓	X	✓	✓	
Reciprocity	Public blockchain	✓	X	X	X	X	X	X	X	X	X	X	X	X	***Software reciprocity*** *describes the methods by which user data is stored, exchanged and protected from loss or abuse.*
	decentralized	✓	X	X	X	X	X	X	X	X	X	✓	✓	✓	
	Import/Export data [2]	✓	X	X	X	X	✓	X	X	X	X	X	X	X	
Integrity	PK reputation	✓	X	X	X	X	X	X	X	X	X	X	X	X	***Integrity*** *describes how a network protects user reputations, limits exposure to abusive accounts, and resolves conflicts between users.*
	Conflict resolution	✓	X	X	X	X	X	X	X	X	X	X	X	X	
	Invite tree [3]	✓	X	X	X	X	X	X	X	X	X	X	X	X	
Contribution	Open source	✓	X	X	X	X	X	X	X	X	✓	✓	✓	✓	*Users of The Relay Project will always be able to view the source code,* ***contribute*** *changes and new apps, and even claim bounty money.*
	Users build apps	✓	✓	✓	✓	X	X	X	X	X	X	X	X	✓	
	Users earn money [4]	✓	X	X	X	X	X	X	X	X	X	X	✓	X	
Resiliency	Stored on client	✓	X	X	X	X	X	✓	X	X	X	X	X	✓	***Data resiliency*** *is defined as how well data is resilient to theft, manipulation, censorship, and loss.*
	No 3rd party access	✓	X	X	X	X	X	✓	X	X	X	X	X	✓	
	Client gatekeeper [5]	✓	X	X	X	X	X	X	X	X	X	X	X	✓	

1. **Private Keys** must *only* be stored only on a user's private device, *never* on a public cloud server.
2. Social Media created in a user's **KeySpace** can be imported/exported to another *Blockchain-powered* Social Network.
3. The invite tree keeps track of who invited a member to the social network. This is used to manage abuse and ensure **user integrity**.
4. **Community Source** Projects like Relay allow users to *earn money* when they **contribute** to a software project.
5. Social Network *GateKeepers* control what social content you will see. Relay is a **Client-Side** *GateKeeper*, which gives all the control to the user.
6. **KeyPair Encryption** is vulnerable to exploit if the critical credential (*The Private Key*) isn't properly protected by the software client.

Funding The Relay Project

The Relay Project is based on our 'Community Source Principles' which provide end-users with direct access to the development cycle and decision making process of the software they use. Not only do we want the people involved in their own internet experience again, we want the people involved in development of where that internet experience may lead in the future. As a non-profit 6 open-source project, we aim to create communication and e-commerce tools that anyone can use freely, absent of the corporate 'profit motive' fee schedules, and arbitrary boundaries & forms we've all come to accept.

Relay introduces the following concepts, principles, and interfaces

- Unified Channels (worldwide, unlimited communication)
- Proximity Channels (location-based communication & services)
- Keyspace (data control & ownership)
- Turnkey Automation (proximity + Public Key Identity)
- Public Key Identity Reputation System & Network Invites

Our project's undertaking adheres to a strict vision: we believe the user's social content belongs solely to user, and that their data should be theirs to control. Sadly, as we are constantly reminded with every data leak or privacy infringement, this is not only not the case, but the notion of controlling your data is mostly unheard of.

Blockchain-powered social networking software (like Relay) solves this problem by providing users with their own **Public Key Identity**, and a corresponding **Private Key**. This allows users strict control over their social content, prevents data leaks and 3rd party mining, and even allows (for example) people to take their data/timeline to another (block-chain) social network if they please.

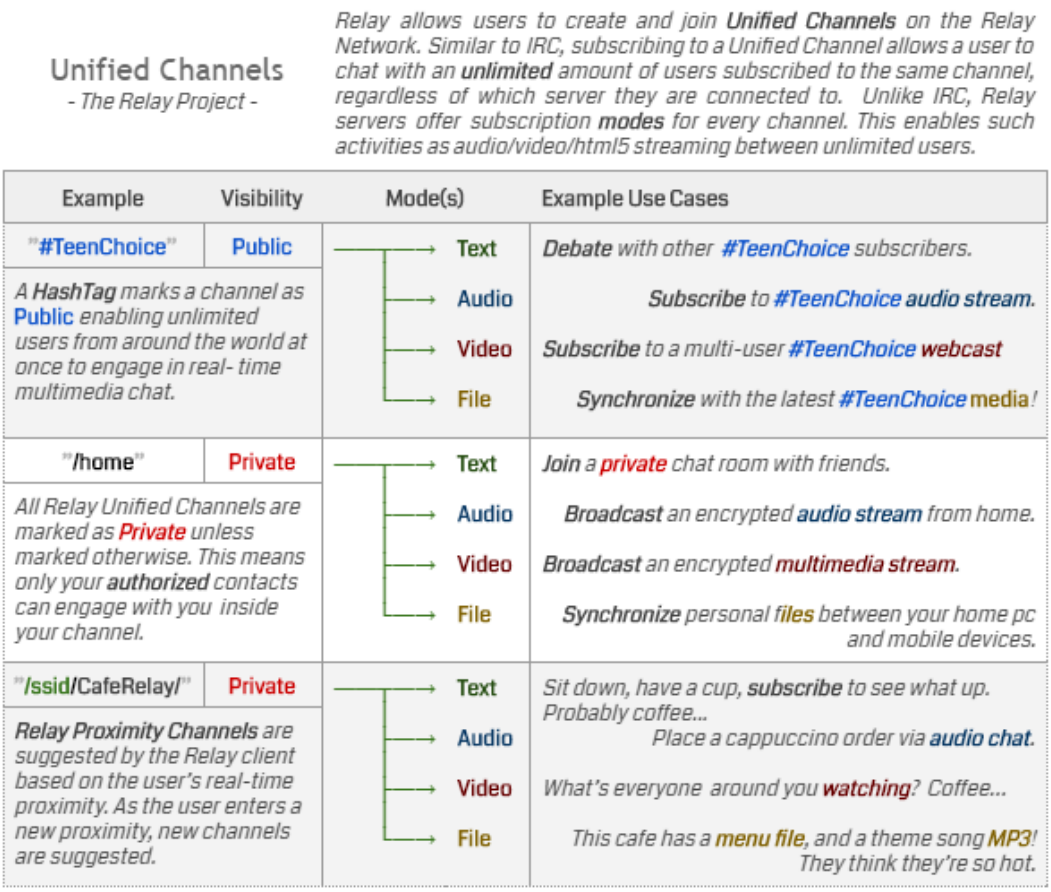
Relay offers the public an alternative not just in software, but with approach to the way the internet should be utilized. With Relay, our goal is to help software end-users reduce reliance on authority, enable blockchain-powered content creation, and bring online communities back to their source and purpose: the freedom of open, secure, & sustainable communication on the internet.

How your capital will help us

- To promote public awareness of The Relay Project and Community Source Principles
- To expand our community and educate end-users on Relay Principles
- To add more team members to core development and expand the project
- To keep The Relay Team working on the project at 100% capacity
- To effectively educate the public the benefits of key-pair-encryption, block chain technology, and the concept of alternatives to 'internet gatekeeping' via various media.lay, our

Relay Introduces: Unified Channels

The Relay Project allows users to create and join unlimited channels of streaming communication. All you will need to join a Relay Unified Channel is the **channel name**. Channels are case-insensitive and consist of a **string of alphanumeric and special characters**. Anyone can subscribe to a channel, as well as create *private* channels of their own, and make use of real-time audio, video, chat and html5 multimedia.



Once a channel is suggested, you may subscribe at any time enabling such activities as:

- **Text/HTML chat** with people in the channel (like chat rooms or IRC)
- Relay (!) an **audio or video stream** to everyone in the channel
- Announce your **Public Key Identity** to a channel with a business or proximity.
- **Share P2P files** with everyone in your proximity, including people who have not added you as a contact yet. This is also a good way to make new contacts.

Relay introduces: Proximity Channels

A new way to find friends and services near you; a Relay Proximity Channel is **automatically suggested** by the Relay Client whenever your device enters **proximity** with a *signal beacon (*like a wifi router, cell tower or another portable device). Proximity Channels may also be suggested based on **GPS coordinates**, and reverse-geocoding values, and even your Time Zone. *No connection to the proximity beacon is necessary.* The Relay Client only needs to be made aware of it to calculate its corresponding channel on The Relay Network.

Proximity Channels
- The Relay Project -

*Relay Clients will allow users to **subscribe** to **Proximity Channels** as proximity information becomes available. Channels can be used to communicate with nearby users and make use of local services. A subscribed user may remain subscribed to a **Proximity Channel** even after they have left that proximity.*

Beacons	Proximity Variables	Generated Channels	Common Applications
Bluetooth Devices	Name RelayPhone MAC A5:b4:c3:d2:e1:f0 IP 199.254.0.98	→ /bt/RelayPhone/ → /mac/a5b4c3d2e1f0/ → /ip/199.254.0.98/	*Bluetooth Proximity Channels follow users wherever their Bluetooth device's signal goes, allowing other users to find and communicate with them when they beacon nearby.*
Wifi Routers	SSID CafeRelay IP 199.254.0.1 BSSID a0:b1:c2:d3:e4:f5 MAC f0:e1:d2:c3:b4:a5	→ /ssid/CafeRelay/ → /ip/199.254.0.1/ → /bssid/a0b1c2d3e4f5/ → /mac/f0e1d2c3b4a5/	*Wifi Proximity Channels allow users to communicate within or nearby a house or by subscribing to channels based on Wifi router beacon. No connection to the router is needed.*
GPS & Reverse Geocode	GPS N34, W118 Zipcode 90210 City Beverly Hills County Los Angeles State California Country United States	→ /gps/n34/w118/ → /zip/90210/ → /city/beverly_hills/ → /county/los_angeles/ → /state/california/ → /country/united_states/	*GPS Proximity Channels allow users to locate and communicate with other users in the same region or locality, without the need for a common beacon between them.*
Time Zone	Zone Pacific Standard UTC GMT -8	→ /timezone/pacific/ → /utc/-8/	*Time Zone Proximity Channels allow users in the same timezone to network with each other.*

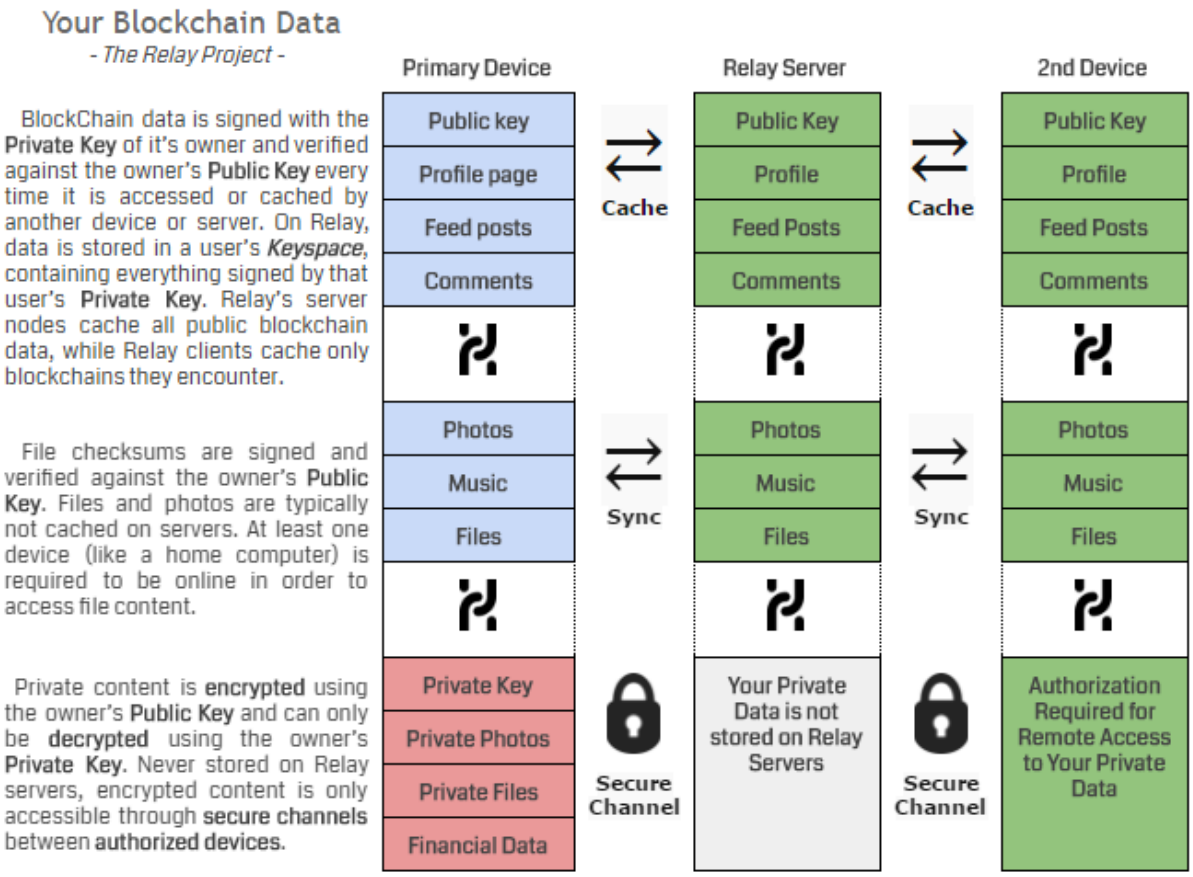
Proximity Channels allow for much more than just communication:

- Broadcast your **Public Key Identity** to everyone around you and make new contacts
- Use your **Private Key** to authorize payment to a local business via **Signature Verification**
- **Check in** to a hotel or reserve a table at a restaurant just by walking inside
- Engage in **Real-Time Ballot Voting** with people around you
- **Redeem** promotional offers from local businesses and services when entering their proximity
- Share and Receive P2P files with anyone in your **Proximity** (without knowing them first)

Relay Introduces: The Keyspace

The Relay **KeySpace** is a paradigm shift in web content delivery. Your *KeySpace Content* consists of anything from feed posts, personal web pages, professional & business functionality, to merchant & e-Commerce Solutions. Using **WebRTC** technology, KeySpace content loads instantly via always-on, two-way socket communication. **PGP Encryption** allows user-contributed Relay content to be verified automatically, and cannot be faked or manipulated in any way.

Only the **original author** has the power to change their KeySpace Content.



KeySpace = Your Personal Relay Blockchain
All Public User KeySpaces = The Relay Public Blockchain

Own your Social Content with the BlockChain:

When you use a Blockchain powered Social Network like Relay, you can seamlessly take *all* your data with you when you visit other Blockchain powered Social Networks. Sharing is better:

- **KeySpace** defines all the content a user has published to their BlockChain. All content is verified against the user's **Public Key** as it propagates through the network.
- The Blockchain ensures only **you** can publish, modify, or delete content under your **Public Key Identity**, even after it appears on other social network blockchains.
- **Import/Export** your entire timeline and all your KeySpace data to and from another (blockchain supported) software service!
- **Synchronize** KeySpace content between devices without needing a central database. At least one synchronized device is required to be online in order to access KeySpace Files.
- **P2P Distributable** Blockchain technology automatically **caches** a local copy of your friends' blockchains as you encounter them, making it very hard for anyone to lose data again.
- **Communicate between social networks**. Join a chatroom and talk to other people from other social networks.
- **Post a comment** or debate with other visitors of any website, even the sites that don't allow comments. It's your blockchain, your data.
- **View and manage** all comments and posts published under your Public Key Identity on a single interface even if they were made on different social networks or websites.

Network Invites and Public Key Reputations

What are Invites?

Invites allow the development team to limit the pool of registered users during beta testing, and allows the Relay Network to grow at a controlled rate.

Do you need an Invite to use Relay?

Nope! All features of The Relay Project are fully functional to all users for-free forever. You don't need to register in order to use Relay.

Then what does an Invite give me?

As a registered user on the Relay Network, all your published content will have a permanent place on the public blockchain forever. Only registered users may publish data to the public blockchain; so if you want to engage in public votes, create public content groups, or otherwise create a permanent presence on the network, you need to register your Public Key.

What does Public Key Reputation accomplish?

On the Relay Network, reputation matters. Users understand that their reputation counts, therefore abuse of services or other users will violate community standards. That means you are responsible for those you invite to the network. Making use of the permanence of blockchain technology, *your actions on the network may affect their Public Key Reputation. Who you invite to Relay impacts you as well.*

What does an Invite Tree accomplish?

Invite Registration allows the Relay Network to maintain a published *Invite Tree* of Public Key Identities. This allows registered users to invite as many friends, family, and other contacts as they like to join the Relay Network themselves for free. Ultimately this results in a safer, responsive, and inclusive online community of unlimited potential.

What if I don't have anyone to invite me to the Relay Network?

The easiest way to obtain a free registration on the Relay Network is to join a public Relay Unified Channel and ask for one! You will always find someone on the network willing to let you in. The next simplest way to obtain registration is to make a >$0.01 donation to the project. Donations provide a way to verify the name identity of someone not known to the network. This puts the donor at the top of their own Reputation Invite Tree. This also provides a way for other users to manage abuse by tree. Remember, you don't need to register or be invited to use Relay!

Do I need to be registered to perform services or earn a living on the Relay Network?

No! But you should really consider it. The most critical element for a successful transaction on the Relay Network is your *Public Key Reputation*. Registration also provides your work history, client feedback, html5 profile, and all your other published career information with a permanent place on the public blockchain forever. Not bad for a penny!

The Project Plan

The Relay Project is in year number two of development, completing essential Phase 1 steps (the Framework) and is active with development into Phase 2. Upon launch, the Relay Client will be available for both desktop and mobile devices on all platforms. The status of each phase of development is indicated below:

Phase 1: Framework + R&D	Key Pair Encryption	Key-pair generation	90%
		Key-pair management	30%
		Keyspace signature verification	40%
		Partial keys and password handling	15%
	Host Platform Integration	Modern (webRTC) browsers	90%
		Android app (Play Store)	20%
		Chrome OS (extension)	40%
		iOS app (Apple Store)	0%
		Windows (desktop and phone)	0%
	Server	Server-side signature verification	60%
Phase 2: Messenger	Instant Messenger Client	UI: Contacts, messages and inbox	10%
		UX: Onboarding, registration, and login	10%
		HTML5 chat and audio/video calls	10%
		Contact online status subscription	20%
		2-Way encryption (Public-key handshake)	20%
	Host Platform Integration	Android/Chrome messenger client	20%
		IPhone, IPad messenger clients	0%
		Windows Phone messenger client	0%
	Server	Contact status subscription	20%
Launch client and server (all platforms)			0%
Phase 3: Unified Channels	UI/UX	HTML5 chatroom UI	20%
		Channel subscription manager UI	20%
	Channel Streaming	Text/HTML5 chatbox	40%
		Audio/Video broadcast and subscription	10%
		File transfer	10%
	Proximity Channels	Proximity scanner (BT, WIFI, NFC, GPS,...)	40%
		Channel customization and redirects	0%
		Proximity services and identity broadcast	10%
	Server	Channels and client subscriptions	10%
		Unified relay channels	10%
Launch Unified and Proximity Channel services			0%

Phase 4: Social Network	Publishing	Feed & timeline	30%
	KeySpace File Storage	File storage and synchronization	0%
		File sharing	0%
	KeySpace Content	Forums, comments, likes and signatures	20%
		Content sharing	0%
	Payment Services	3rd-party payment integration	0%
		Remote payment authorization	0%
	Server	Keyspace POST serving and caching	20%
Launch social network features			0%
Phase 5: Applications	Voting System	Voting booth interface	20%
		Ballot hosting and management	10%
	Vendor Services	Table reservation services	0%
		Touch-free proximity payment	0%
	Hotel Services	Hotel reservation services	0%
		Proximity check-in	0%
	Education	Self-motivated educational applications	0%
	Games	User-contributable games and media	0%
	Server	Application Framework	10%
Launch Application Platform			0%

Conclusion

Relay is an accumulation of ideas and concepts that have been discarded, displaced, or forgotten. The team behind The Relay Project consists of veteran internet and relatively new users alike who have come together with shared ideas for the future. The internet has become more robust, yet can seem so limiting and disconnected. It impacts the lives of people every day, but can leave them feeling confused and helpless. The Relay Project is determined to repurpose the experience towards the user, so they can focus beyond the noise and better their internet experience for themselves, and share that experience with everyone.