

MATRIX: ONE MESSENGER TO RULE THEM ALL?



by Moritz Stückler ([Twitter](#), [GitHub](#))

„Matrix is an open network for secure, decentralised, real-time communication.“

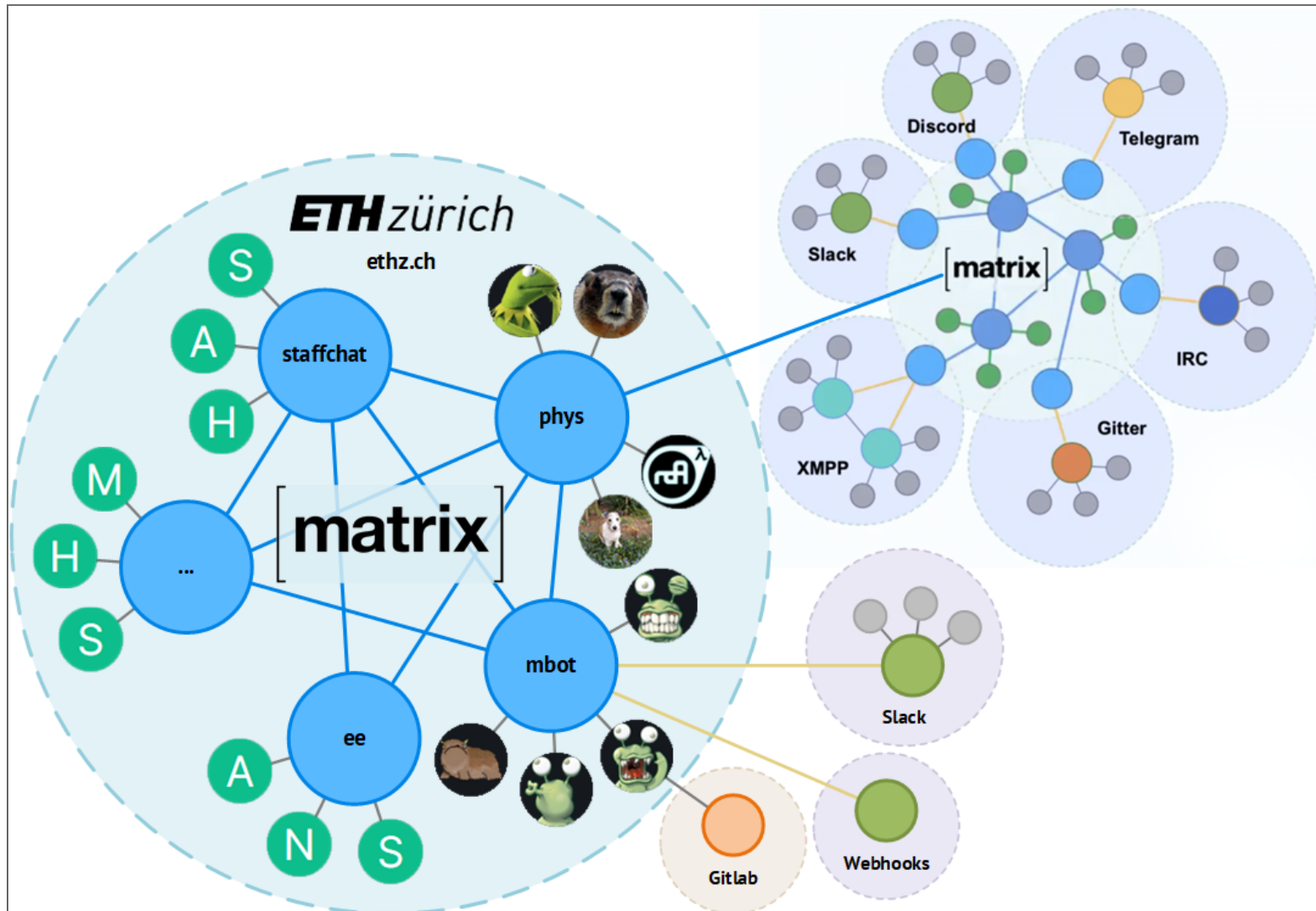
WHAT IS MATRIX?

- Started in 2014 (2019 stable)
- Open Source
- Protocol/Standard (NOT a messenger)
- Based on HTTP & JSON
- Messaging (but also Video/Audio, IoT, M2M, federated database)
- federated (> decentralised)

WHICH PROBLEMS CAN IT SOLVE?

- Fragmentation of the messenger world
- E2E encryption and data ownership
- Single Point of Failure / Centralisation / Censorship

STRUCTURE OVERVIEW



ANALOGY: E-MAIL

All E-Mail users can send mails to each other, no matter if they use Gmail, Yahoo or GMX -> same for Matrix: users can talk to each other no matter, which server they use

	E-Mail	Matrix
Protocol	SMTP, IMAP	Matrix
Server	Mailserver	Homeserver
Client	Apple Mail, Outlook	Element, FluffyChat, Hydrogen
IDs	E-Mail address	MXID
Provider	GMX, Gmail	matrix.org, tchncs.de, mozilla.org

HOW DOES IT COMPARE TO...?

- IRC: Only decentralised, not federated (need to connect to specific servers/communities)
- Telegram, WhatsApp, Signal, Threema:
 - Only one single client app (no choice)
 - Centralised servers (privacy)
 - Nested room structures instead of single groups
 - Room directory to find rooms
- Slack / Discord:
 - Only one single client app (no choice)
 - Centralised servers (privacy)
 - Instances can't be connected with each other

COMPARISON

	IRC	Telegram, WhatsApp, Signal	Slack, Discord	Matrix
Client Choice	Yes	No	No	Yes
Decentralised	Yes	No	No	Yes
Federated	No	No	No	Yes
Room Directory	Yes	No	Yes	Yes
Nested Rooms	No	No	No	Yes
E2EE	No	Partially	No	Yes

WHO USES IT?

- Universities (ETH Zürich, Uni Hannover, Heidelberg, Berlin, and more)
- Governments and agencies (German Bundeswehr, France, State of Schleswig-Holstein)
- Open Source Communities (Mozilla, Gitter, KDE, and more)

HOW CAN I USE IT?

- Use any public server (e.g. matrix.org)
- Most popular server: Synapse (Python)
- Most popular client: Element (ehemals Riot.im)
 - Multi-Platform (Web, Windows, Mac, Linux, Android, iOS)
 - <https://app.element.io/>