pretty Easy privacy

sva@pEp.foundation https://pEp.foundation twitter@sva – twitter@pEpfoundation – #prettyeasyprivacy

Other sessions during RMLL: Wed (taler), Thu (radar)



Privacy by Default.

PGP / GPG

PGP ≡ **Pretty Good Privacy** Created by Phil Zimmermann in 1991 see RFC 1991 (in 1996)

Zimmermann had been a long-time anti-nuclear activist, he created PGP that people might securely use BBSs and securely store messages and files

OpenPGP \equiv **standard/specification** see RFC 2440 (in 1998) and 4880 (in 2007)

$\mathbf{GPG} \equiv \mathbf{GNU} \ \mathbf{Privacy} \ \mathbf{Guard}$

Created by Werner Koch 1999 from Free Software Foundation (most common implementation of PGP)



0 – Intro 1 – Concept [6 sub-chapters] 2 – Organization 3 – Technology 4 – Apps: Current Implementation 5 – Apps: Demos

0 – Intro

"I don't want to live in a world where everything that I say, everything I do, everyone I talk to, every expression of creativity or love or friendship is recorded." (Edward Snowden)





Go PRISMFAA

UES WE SCAN

0 – Intro: Problem & Solution

Problem:

Online communication is visible like a postcard & this world has mass surveillance

Solution:

First: Mass encryption Second: Mass anonymization



0 – Intro: Just a starting point...

We see ourselves as *cypherpunks* and we want to optimize the costs of mass surveillance

PGP ≡ pretty good privacy **p≡p** ≡ pretty Easy privacy

Not only privacy for citizens, but also security for everyone...

0 – Intro: Just a starting point...

Cypherpunks?

"Privacy is necessary for an open society in the electronic age. Privacy is not secrecy.

A private matter is something one doesn't want the whole world to know, but a secret matter is something one doesn't want anybody to know."



1 – Concept: Overview

1.0. Privacy by Default 1.1. pretty Easy privacy 1.2. Peer-to-Peer and End-to-End 1.3. Free Software 1.4. Compatibility (Crypto & Transports) 1.5. Anonymity (GNUnet)

Privacy by Default.

p≡p does what the user would want to do

Instead of writing how-to guides we write user expectations into software and standards



We started a first Internet-Draft together with with ISOC-CH on the general pEp principles.

It's online and ready for discussion: https://datatracker.ietf.org/doc/draft-birk-pep/

IETF	Datatracker	Groups Documents Meetings Other User		
General	he P	Document Type Active Internet-Draft (individual)		
Internet	È	Last updated 2017-06-28		
Ops & M	1gmt 🕨	Stream (None)		
Routing		Intended BEC (None)		
Security		status		
Transpo	rt 🕨	Formats Balain tout Bands Bland	Ph b ib to an	
IRTF	▶	Pointats plain text with point with	Dibtex	
New work	k	Stream Stream state (No stream defined)		
Charteri	ng groups	Consensus Unknown		
BOFs		Boilerplate		
Other gro	oups	RFC Editor Note (None)		
Conclud	ed groups	IESG IESG state I-D Exists		
Non-WG lists		Telechat date		
Documen	ts	Responsible AD (None)		
Search		Send notices to (None)		
Draft su	bmission			
Sign in t docs	to track	$\square \text{ Email authors} \clubsuit \text{ IPR} \leftarrow \text{ References} \rightarrow \text{ Referenced by} \clubsuit \text{ Nits} \textbf{Q} \text{ Search lines}$	sts 🕶	
RFC strea	ims	Network Working Group	V. Birk	
IAB		Internet-Draft Intended status: Standards Track	H. Marques	
IRTF		Expires: December 31, 2017	pEp Foundation	
ISE			S. Koechli	
Meetings			June 29, 2017	
Agenda				
Material	s	pretty Easy privacy (pEp): Privacy by De draft-birk-pep-00	efault	
Floor Pla	an	drait-birk-pep-00		
Past pro	ceedings	Abstract		
Past	ig	Building on already available security formats and message transports		
Request	a session	(like PGP/MIME for email), pretty Easy privacy (pEp) describes		
Session	requests	protocols to automatize operations (key management, key discovery, private key handling including peer-to-peer synchronization of		
Other		private keys and other user data across devices) that have been seen to be barriers to deployment of end-to-end secure interpersonal		
IPR discl	losures	messaging. pEp also introduces "Trustwords" (instead of		
Liaison		fingerprints) to verify communication peers and proposes a trust rating system to denote secure types of communications and signal the		
stateme	nts	privacy level available on a per-user and per-mes	sage level. In this	
Downset	f registry	document, the general design choices and principle	es of pEp are	
Statistic	s	outtineu.		
Tutorial	s	Status of This Memo		

pretty Easy privacy (pEp): Privacy by Default draft-birk-pep-00

Abstract

Building on already available security formats and message transports (like PGP/MIME for email), pretty Easy privacy (pEp) describes protocols to automatize operations (key management, key discovery, private key handling including peer-to-peer synchronization of private keys and other user data across devices) that have been seen to be barriers to deployment of end-to-end secure interpersonal messaging. pEp also introduces "Trustwords" (instead of fingerprints) to verify communication peers and proposes a trust rating system to denote secure types of communications and signal the privacy level available on a per-user and per-message level. In this document, the general design choices and principles of pEp are outlined.

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1.1. p≡p Concept: pretty Easy privacy

Makes Privacy Easy; By Default.

Easy to install; Easy to understand; Easy to use.

No hassle; No training needed.

Also: Easy for app-devs!

1.1. Easy: Trustwords

>> Battery Horse Staple <<

instead of

>> EC55 39C8 FECF <<



Use same keys on multiple devices:

Realized with the help of Device Groups:

- (1) New device generates a device-key,
- (2) Pings with this one to the device-group,
- (3) Existing devices and user verify the new device,
- (4) Devices agree on a secret main group,
- (5) All Devices exchange their secret keys.

1.1. Easy: p≡pSync



Sync keys, contacts and calendar (Finally the problem of backups is solved, too!)





1.1. Summary: Trustwords & p≡pSync

File Home Send / Receive Folder View Q Tell me what	Inbox - test001@pep-security.net - Outlook you want to do
Image: Section of the section of th	Move to ? To Manager Imager Imager
Wrong	Image: Secure & Trusted

1.2. p≡p Concept: Peer-to-Peer

Peer-to-peer transport End-to-end encryption No centralized infrastructure or closed services



1.3. p≡p Concept: Free Software

p≡p is Free / Libre Software https://pep.foundation/pep-software/ (GPLv3)

Regular independent external code audits



1.4. p≡p Concept: Compatibility

Multiple crypto technologies Multiple message transports Multiple platforms Multiple languages



1.4. p=pConcept:Compatibility:Crypto

OpenPGP / GnuPG S/MIME OTR OMFMO Signal Protocol / Axolotl



. . .

1.4. p≡**p** Concept:Compat:Transports

SMTP / IMAP / POP3 / Exchange XMPP (jabber) non-open standards (e.g. Twitter DMs) GNUnet SMS



1.5. p≡p Concept: Anonymity

Content encryption is not everything...

E.g. E-Mail: Metadata stays visible! (e.g.: from/to, IPs, Subject, size,...)

 $p\equiv p$ already encrypts subjects inline (opt-out) $p\equiv p$ will obfuscate & encrypt the rest of the header



1970/80: Internet v1.0

Wow, I can access your computer, you can check out mine!! Awesome!

2010/20: Internet v1.1

Sure I can access other computers and use their services. Wait, What? They can access mine!?

20XX/25: Internet v2.0

End-to-end encryption and anonymization of the ways data flows.



Let's make a GNU one!



"GNUnet is... a mesh routing layer for end-to-end encrypted networking and a framework for distributed applications designed to replace the old insecure Internet protocol stack."

(started 2002 in academia)

"GNUnet wants to... ...become a widely used, reliable, open, non-discriminating, egalitarian, unfettered and censorship-resistant system of free information exchange.

...serve as a development platform for the next generation of decentralized Internet protocols."

Try it out!

Clone gnunet.org/git Follow instructions on the website Get support via #gnunet on freenode Report bugs on gnunet.org/bugs

1.n. p≡p Concept: Summary

Users don't have to think about the crypto anymore. They can just use it. By default.

"It is this 'little hacker inside' that decides on the cryptography chosen to communicate with the message recipient."

2 – Organization: Overview

Company: https://prettyeasyprivacy.com/ Sells applications and services

Foundation:

https://pep.foundation/ Supporting Free Software Code belongs to the Foundation

3 – Technology: Overview

3.0. Architecture
3.1. Engine and Adapters
3.2. List of Adapters and Repos
3.3. List of Developing Platforms
3.4. Engine

3.0. p≡p Tech: Architecture


3.1. p≡p Tech: Engine and Adapters

p≡p on Desktop Operating Systems



3.2. p≡p Tech: Adapters & Repos

MailModel	modelling Message and Folder
netpgp-et	fork of netpgp (iOS adaptions and fixes)
pEpCOMServerAdapter	p≡p COM server adapter
pEpEngine	p≡p engine
pEpJNIAdapter	p≡p JNI adapter
pEpJSONServerAdapter	p≡p JSON adapter
рЕрМІМЕ	p≡p MIME library
pEpPythonAdapter	p≡p Python adapter
pEpQtAdapter	p≡p Qt adapter
pEpiOSAdapter	p≡p iOS adapter
pantomime-iOS	fork of pantomime (iOS adaptions)
yml2	>b's YML 2

 $\mathsf{U}=$

https://cacert.pep.foundation/dev https://letsencrypt.pep.foundation/dev

3.3. p≡p Tech: Developing Platforms

Platforms we are developing on: iOS Android Linux BSD MacOS Windows

3.4. p≡p Tech: Engine

p≡p engine modules



4 – Applications: Overview

4.0. Current Implementation
4.1. Android via K-9-Fork
4.2. MS Outlook via Add-in
4.3. Thunderbird via Enigmail/p≡p
4.4. Coming soon...

4.0. p≡**p** Apps: Implementation

Handles OpenPGP and S/MIME without any hassle for the user:

Automatically encrypts Encrypts the subject inline No key management needed No keyserver or other centralized infrastructure Fingerprints \equiv Trustwords Opt-in passphrase for keys Header encrypted and obfuscated $p\equiv pSync$

4.1. p≡p Apps: Android/K-9-Fork



Ready to use

Available on Play Store and F-Droid



4.2. p≡p Apps: Windows/Outlook

Ready to use

Available on prettyeasyprivacy.com

Free as in freedom not as in free beer.



(Contact us for testing license)

4.3. p≡p Apps: Thunderbird/Enigmail

Coming with next release of Enigmail No need for users to manage keys (but "advanced/expert" mode still available)



4.4. p≡**p** Apps: Coming...



5 – Applications: Demos: Overview

5.0. Intro5.1. Android5.2. MS Outlook





		23:42
	Inbox	۹
	Rick Deckard Re: [BR] Electric Sheep	@ 23:42
	Hi Rachael As a follow-up to yesterday's	☆
r I	Tom	@ 23:23
	>>>><<>>	☆
-	Leon Kowalski	@ 23:01
.	Heron As per attached documents, there is a new .	☆
	Kaiser	@ 17:22
1	no worries: 77 818 11	☆
2	Dr. Eldon Turell	© 17:11
8	Hi R. Is there a summary of the research	☆
0	Bear	@ 14:59
	Your Message Good day, Rachael	☆
	J.F. Sebastian	221
D	still on?	L'
	а о п	

Android

Version 4.3 or higher Play-Store or F-Droid



Android

Installing





✓ App installed.

DONE		OPEN	
Ø	0		

B 16:11

Android

Installed



🛡 🖌 📋 19:01

P=P Welcome to p≡p

p=p is a powerful free email client for Android with pretty Easy privacy.

Its improved features include:

- · Push mail using IMAP IDLE
- Better performance
- Email signatures
- Bcc-to-self
- · Folder subscriptions
- All folder synchronization
- Return-address configuration
- · Keyboard shortcuts
- · Encrypt/decrypt emails by default

Untrusted server (save emails encrypted on the server)

Trusted server (save decrypted emails on the server)

- · Encrypted BCC support
- Compatibility with OpenPGP (key server lookup)
- Manual private key import
- Automated public key import
- ...and more

This software is in beta phase. Please just use with test accounts and for testing purposes.

Import settings

Next

1

Android

Welcome screen after fresh install



Android

Setup new account

(keys will be generated automatically. For importing existing keys you'll need a workaround till version with pEpSync is ready)



Android

Setup account type (we'll choose IMAP here)



			19:02
👳 Incoming serve	er set	tings	
IMAP server			
imap.pep.li			
Security			
SSL/TLS			
Port			
993			
Username			
chew@pep.li			
Authentication			
Normal password			
Password			
•••••	••		
Auto-detect IMAP	name	space	
IMAP path prefix			
Use compression on netw	ork:		
		N	ext
Þ	0		

Android

IMAP server settings

		0 🗸	19:07
outgoing serv	/er sett	ings	
SMTP server			
smtp.pep.li			
Security			
SSL/TLS			
Port			
465			
Require sign-in.			
Username			
chew@pep.li			
Authentication			
Normal password			
Password			
	•••		
		Next	
Ø	0		

Android

SMTP server settings



Android

Setup account name



•• * / 1	20:23
💬 Compose 🖉 + 🕨 p≡p	:
From chew@pep.li	
To D deckard@pep.li	~
Pictures	
Thanks for the photos Rick! 😐	
Chew	
<u>.</u>	
 Sent from my p≡p for Android.	
⊲ O □	

Android

Compose view Grey mode: unencrypted plain text, key will be attached



Android

Got reply with attached key Yellow mode Click p≡p in the upper corner



Android

Asking for handshake

* 🛋 100% 🛢 12:59

.

Partner deckard@pep.li

PEP Trustwords

Myself bear@pep.li

Ask your partner in person or over the phone: What are your trustwords? Then compare to the correct answer shown below.

STOCKADE BARBEY SILAGE BUDGERIGAR KOWLOON DEVINNE JOSIAS ARDYS VAPID DOGMATICS

Confirm Trustwords

Wrong Trustwords

Android

Showing trustwords

Trustwords	
'artner leckard⊚pep.li	PGP Fingerprint
Myself	Language
Ask your partner in pe	Show long trustwords
What are your trustwo correct answer shown	ords? Then compare to the below.
STOCKADE BA	ords? Then compare to the below.
STOCKADE BA	RBEY SILAGE
STOCKADE BA OFFICIENTS STOCKADE BA SUDGERIGAR I DEVINNE JOSI	RBEY SILAGE KOWLOON AS ARDYS VAPID

Wrong Trustwords

Android

Trustword Menue

	🔋 л 100% 🗎 13:00
P Trustwords	
Partner feckard@pep.li	
Myself bear@pep.li	
Language	
Catalan	
German	
Spanish	
French	
Turkish	
English	

Android

Trustword language selector



	🔋 л 100% 🗎 13:00
P Trustwords	
Partner feckard@pep.li	
Myself bear@pep.li	
Language	
Catalan	
German	
Spanish	
French	
Turkish	
English	

Android

Trustword language selector



* 📶 100% 🛢 13:00

.

Partner deckard@pep.li

PTrustwords

Myself bear@pep.li

Ask your partner in person or over the phone: What are your trustwords? Then compare to the correct answer shown below.

REINSTÁLAME ACTRIZ PUDRI-DOR BERNARDA GUERRERO CHACONADA GANGUEAR ZAFIEDAD SUMARE DECIMAL

Confirm Trustwords

Wrong Trustwords

Android

Trustwords language selected spanish

Trustwords	
'artner leckard⊚pep.li	PGP Fingerprint
Myself	Language
Ask your partner in pe	Show long trustwords
What are your trustwo correct answer shown	ords? Then compare to the below.
STOCKADE BA	ords? Then compare to the below.
STOCKADE BA	RBEY SILAGE
STOCKADE BA OFFICIENTS STOCKADE BA SUDGERIGAR I DEVINNE JOSI	RBEY SILAGE KOWLOON AS ARDYS VAPID

Wrong Trustwords

Android

Trustword Menue

<u> </u>			•• •	20:35
P Trust	words			
Partner Rick Decka	ard <deck< th=""><th>ard@pep.</th><th>li></th><th></th></deck<>	ard@pep.	li>	
84F1	34C4	24E5	C701	DBD2
D553	960D	7CD8	7E4F	F581
Myself deckard@	pep.li			
8BC2	87D2	C2F5	EBOF	6CFB
34C0	77C8	55B6	62A4	C2C7
	Confir	m Trust	words	
	Wron	ng finge	rprint	
\triangleleft		0		

Android

selected PGP Fingerprints





Android

confirmed Trustwords/ fingerprints: Green mode

	•0		20:42
P≡P Reply	∅₊ ►	p≡p	1
From chew@pep.li	Add from	Contacts	5
To Rick De	Save as c	Iraft	
Re: Pictures	Discard		
Yes! It's very funny	Read rece	eipt	
	Disable p	rotection	
On 8 December 2016 20.31.40 CET, Rick Deckard «deckard@pep.lo wrote: Refer 1 Did you Liked the use with Kalser & Bear enjoying the daws? .P Reis De S&12175 20.25, Reve3al Over wrote: Teamin for the photon Kulki • Over			
Sent from my p≡p	for Androic	1.	
\triangleleft	0		

Android

Option: disable protection



Android

Outgoing mail disabled protection, grey mode

7 1 97% 18:52 Q_ Compose p≡p bear@pep.li From holden@pep.li To Cc Bcc Dinner Hey David, Let's go for dinner tonight! Bear

p≡p

Sent from my K-9 Mail/p≡p on Android.



Android

Incoming mail disabled protection, grey mode
p≡p Apps

	▼ ×	23:42
=	Inbox	Q
	Rick Deckard Re: [BR] Electric Sheep	@ 23:42
	Hi Rachael As a follow-up to yesterday's	다
Ŧ	Tom	@ 23:23
<u> </u>	buy cyalis	☆
-	Leon Kowalski	@ 23:01
E.	As per attached documents, there is a new	☆
	Kaiser	@ 17:22
	no worries: 77 818 11	☆
2.1	Dr. Eldon Turell	@ 17:11
	Hi R. Is there a summary of the research	☆
2	Bear	@ 14:59
0	Your Message Good day, Rachael	☆
2	J.F. Sebastian	2:21
ê,	still on?	Ch
	V O D	

Android

Available on Play-Store or F-Droid

8 S		↓ =		My book - P	Preview Ur	nencrypt	ed (HTML)		Ŧ	—	٥	×
File	Message	Insert	Options	Format Text	Review	Ŷ	Tell me what you w	ant to do				
Paste ▼	Calibri (Bo B I U	oc = 11 = = 1 al <mark>2</mark> = _] A [*] A [*] Ξ A [*] + Ξ Ξ	• ¹ = • ♦	Address Book	<mark>₿</mark> @ Check Names	 Attach File • Attach Item • Signature • 	► - ! ↓	Disable Protection	Attach My Key		
lipboard 🗔		Ba	sic Text	Ea.	Nam	ies	Include	Tags 🕞	p≡p)		~

[[]]

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deckard@pep.li To... = Windows 7-10, all service <u>C</u>c... Send Subject My book packs, 32-bit & 64-bit Dear Rick Did you find the book I told you about? Outlook 2010-2016 (latest The story is truly breathtaking. Have a good evening, service packs recommended) Rachael — - Privacy Status Secure & Trusted

^ 悟 뛰 네) 티

6/29/2016

岁 pEp for Outlook Setup	- 🗆 X
	Welcome to the pEp for Outlook Setup Wizard
PEDED Privacy by Default.	Please wait while the Setup Wizard prepares to guide you through the installation.
	Back Next Cancel

Start installation



Accept license agreement

😌 User Account Control				
Do you want to allow this app from an unknown publisher to make changes to your PC?				
Program name: C:\Users\pep\AppData\Local\Temp\Temp2_1_0_47 pEp for Outlook Setup.zip\pEp for Outlook Setup v1.0.47.0.msi				
	Publisher: Unknown			
File origin: Flate drive on this computer				
Show details Yes No				
Change when these notifications appear				

Give permissions

闄 pEp for Outlook Setup	– 🗆 X
Installing pEp for Outlook	p≡p
Please wait while the Setup Wizard installs pEp for Outlook.	
Status:	
	Next Const
Back	Next

Installing...

闄 pEp for Outlook Setup	- 🗆 X
	Completed the pEp for Outlook Setup Wizard
	Click the Finish button to exit the Setup Wizard.
Thracy by Delaut.	
	Back Finish Cancel

Installation completed



Older version of gpg4win is already installed?

Gpg4win isn't installed?

p≡p will install Gpg4win to:

C:\Program Files (x86)\GNU\GnuPG

Run in console with admin rights:

Silent / unattended Installation

msiexec /qn /i C:\pEp_for_Outlook.msi /l
C:\pEp_install.log





	То <u>.</u>	pris@pep.li;
⁼	Cr.	
<u>S</u> end	<u>v</u> c	
	S <u>u</u> bject	Cinema tonight

Hi Pris

Actually I arrive earlier than I thought, so we can have a coffee before the cinema.

Am really curious about the movie. 8-)

Later, Rachael

"Unsecure"

Grey mode

□ - Privacy Status Unsecure P = P



To Kowalski@pep.li Subject contact	
Hi Leon Here's my contact. Later, Rachael	"Secure" Yellow mode
□ - Privacy Status	

6/29/2016

SG





	To <u>.</u>	deckard@pep.li
Ē		
	<u>C</u> c	
Send		
	S <u>u</u> bject	My book

Dear	Rick
------	------

Did you find the book I told you about? The story is truly breathtaking.

Have a good evening,

Rachael

"Secure&Trusted" Green mode



Explanation	Suggestion
his message is encrypted but you can upgrade the rivacy and authentication level with your communication artner.	Complete a handshake with your communication partner. A handshake is needed only once per partner and will ensure private and reliable communication.
Outgoing message to: Bear	
bear@pep.li	Stop Trusting
David Holden holden@pep.li	Advanced
Ask your partner: What are your trustwords? The only TRIPE DESALINIZE SIMIAN MENDER COLONY ANNUM LEGENDARY HYMAN AGGREGATELY QUIC Yes - Confirm Cancel Handshake W	correct answer is shown below. CKLIME /rong Trustwords
	Tau atu una sala ana uting



	To <u>.</u>	deckard@pep.li
E •		
	<u>C</u> c	
Send		
	S <u>u</u> bject	My book

Dear R	lick
--------	------

Did you find the book I told you about? The story is truly breathtaking.

Have a good evening,

Rachael

Option: Disable protection





	To <u>.</u>	sebastian@pep.li
Ē		
	<u>C</u> c	
Send		
	S <u>u</u> bject	appointment

		ENG 7.53 AM
	Unsecure	p≡p
[Privacy Status	
		Disabled
	Best, Rachael	
	Can we shift the appointment to Saturday 2 pm?	Protection
	Hi J.F.	

^ 🔤 🖫 🕪 🛢

SG

6/29/2016

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	То <u>.</u>	sebastian@pep.li
=	-	
Send	<u>C</u> c	
_	S <u>u</u> bject	appointment

Can we shift the appointment to Saturday 2 pm?	Protection
Best, Rachael	Disabled
	Key attached
— Privacy Status	
Unsecure	p≡p

0

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[[]]

7:53 AM

6/29/2016

ENG

SG

^ 🔤 🖫 🕪 투

Android & Outlook: p≡pSync

File Home Send	/Receive Folder View 📿 Tell me what	you want to do	Inbox - test001@pep-security.net - Outlook
New New Email Items - Survey	Meeting	Move to: ? Team Email Reply & Delete	Create New Over Rules OneNote Unread/ Categorize Follow
- Favorites	1 0	Qu	uick Steps Read - Up - TFilte
Inbox	(P≡P Device Group	t Mailbox 👻	p=p Device Group
Sent Items	ere croup	Newest J	You are about to add a device to your pan device means Configuration
Deleted Items	Partner test001@pen-security.set	ere.	following Trustwords.
 test001@pep-sec inbox Drafts (This compute Sent Items Deleted Items Junk E-mail Outbox RSS Feeds Search Folders 	testoor@pep-security.net You are about to move a device to another p≡p device group. Confirm by successfully verifying the following Trustwords. WINDOWSILL KELVIN AFFORESTED DEVOUR DELECTABLE MADRAS CUPRIC FREEMEN DONALD TIMBUKTU		test001 mesecurity.net Short Full Advanced WINDOWSILL KELVIN AFFORESTED DEVOUR DELECTABLE MADRAS CUPRIC REEMEN DONALD TIMBUKTU Iwant to display the trustwords in English language Confirm Trustwords Cancel Handshake
° pep	Wrong		- Privacy Status Secure & Trusted
			Preparing to send/receive

Questions?

pretty Easy privacy: #prettyeasyprivacy on Freenode twitter@pEpfoundation https://pEp.foundation/ https://pEp-project.org/

Speaker:

sva@pEp.foundation
sva@IRC (various networks)
twitter@sva
Other sessions during RMLL:
Wed (taler), Thu (radar)



If you're not paying for it, you're not the customer. You're the product being sold.