The evolution of auth, from users to AI agents

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OBLIQUE

Evolution of authentication

Passwords

- Basic auth
- Password policies
- Password managers

Identity federation

- All the acronyms: IdP, SSO, SAML, OIDC, OAuth, SCIM
- Social logins

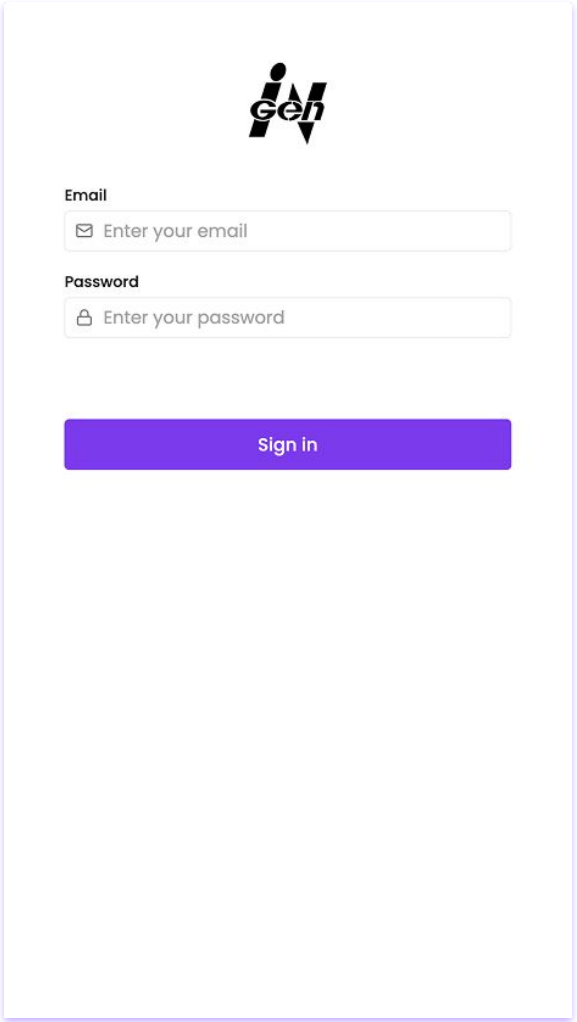
Multi-factor authentication

- Hardware tokens
- Biometrics
- Passwordless
- WebAuthn
- Passkeys

AI agents

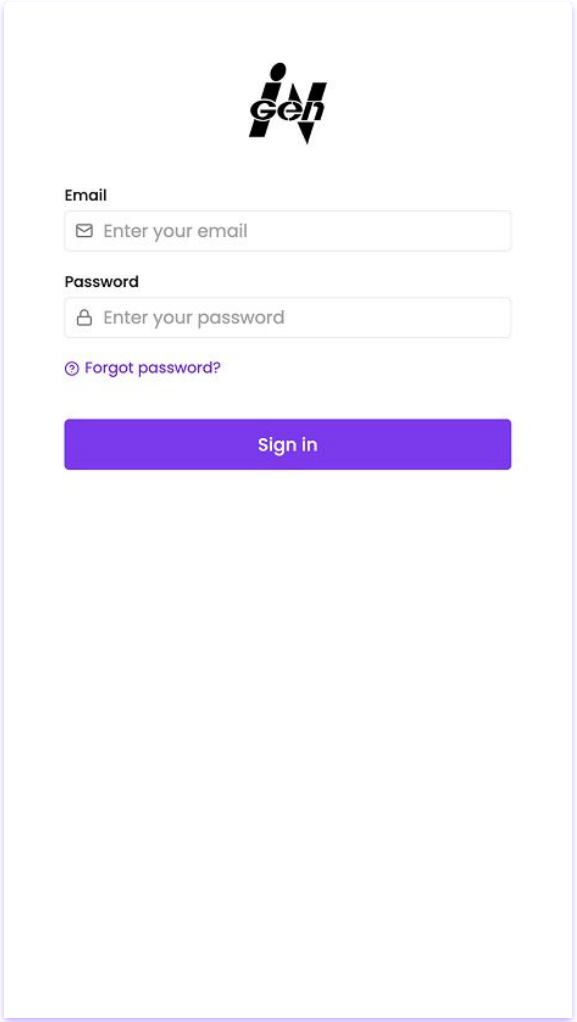
- Long tail of apps
- Distributed identities
- IdP discovery
- Delegation

Passwords



Passwords

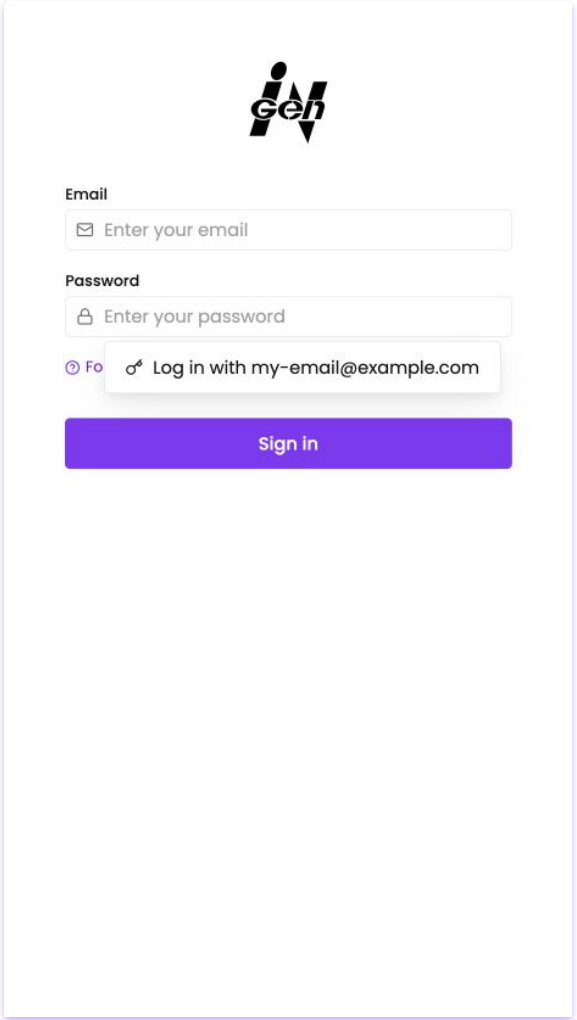
- Introduced in 1960s at MIT
- Password hashing
- Password reuse



Password complexity

- NIST SP 800-63
- Humans are predictable, not random
- Password rotation

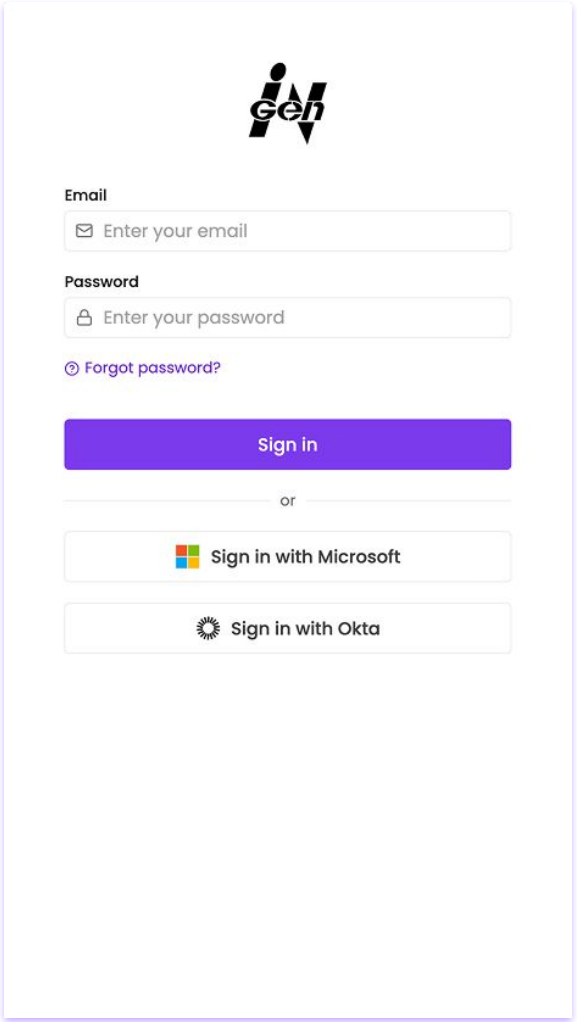
Check out:
https://neal.fun/password-game/



Password managers

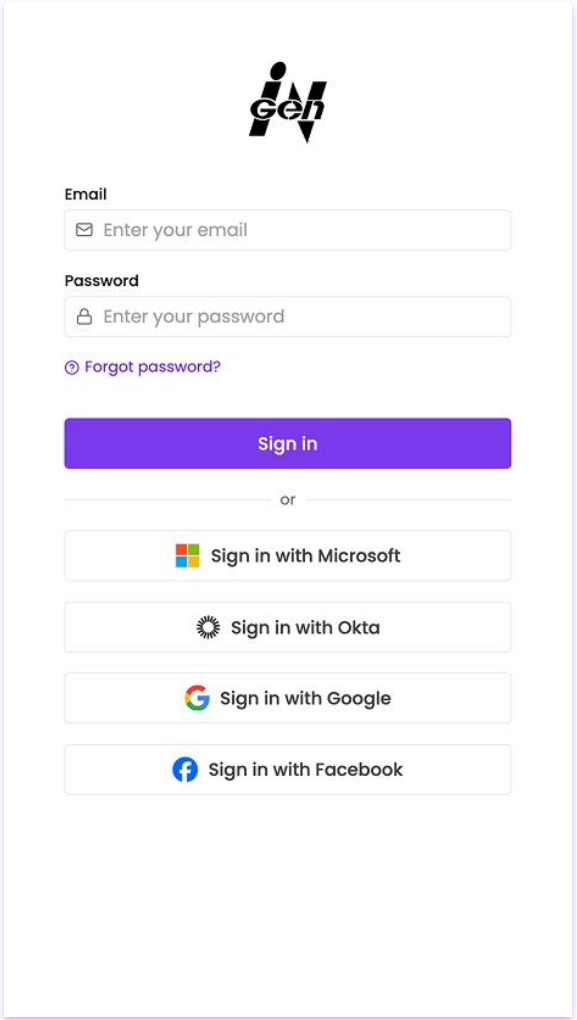
- Users have 168 passwords on average
- Platform vs standalone password managers
- Cognitive burden

Identity federation



Enterprise SSO

- Centralized identity stores (AD, LDAP)
- Federation protocols (SAML)
- Cloud identity providers (Okta, Ping)
- Authorization frameworks (OAuth)
- Authentication of delegated authority (OpenID Connect)



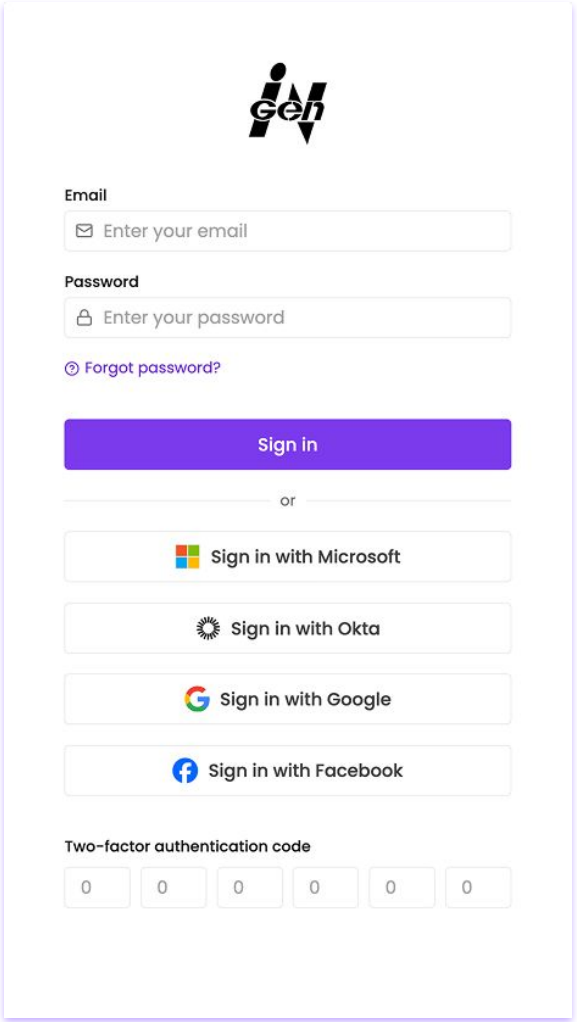
Social login

- Improved both security and usability
- Let services depend on larger platforms for password management, including resets

Service authn: API keys

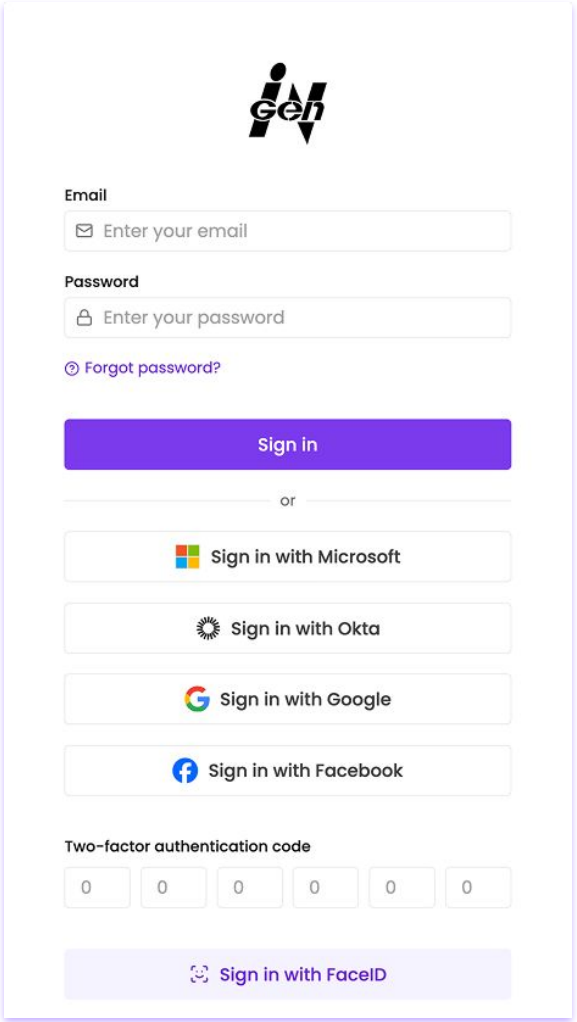
- API keys are like basic auth
- Secret managers
- OAuth authorization
  - Short-lived access tokens
  - Expiry & revocation
  - Permission scopes

Multi-factor authentication



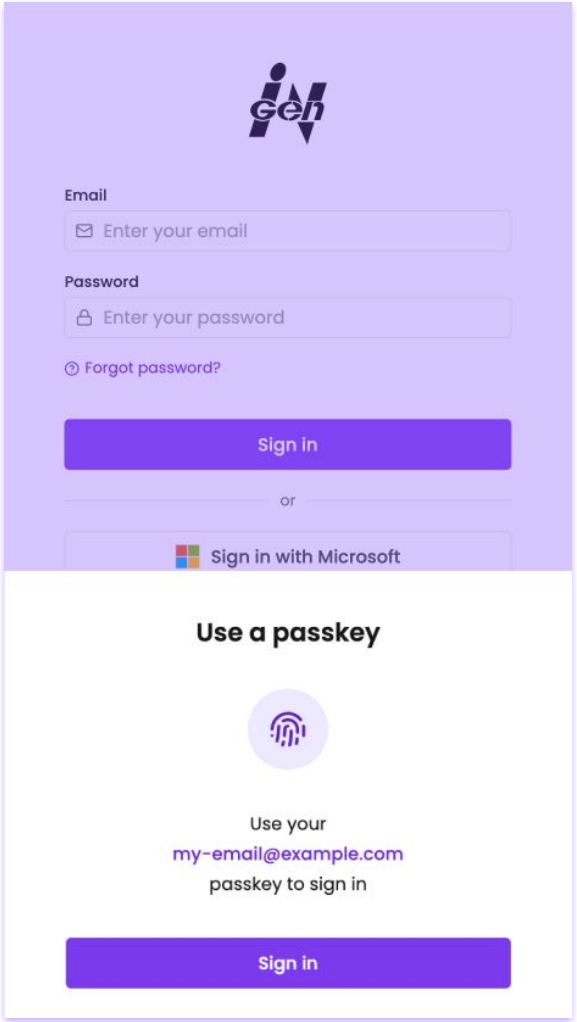
Multi-factor

- **1990s**: RSA SecurID
- **2000s**: SMS codes
- **2010s**: Authenticator apps
- **Mid 2010s**: Push notifications
- **Late 2010s**: Security keys



Passwordless

- **2010s**: Magic links
- **2013**: TouchID
- **2015**: Windows Hello
- **2017**: FaceID
- **2019**: WebAuthn



Passkeys

- **Promise**: phishing-resistant credentials that works across devices
- **Reality**: inconsistent, confusing experience across providers

AI agents

Evolution of authentication

Passwords

Human-generated

to

Random

Identity federation

Decentralized

to

Centralized

Multi-factor authentication

Static

to

Dynamic

AI agents

???

AI agent auth

Acting on behalf of

Looks like a user

- OAuth delegation
- User consent

MCP: OAuth resource server

Acting independently

Looks like a service

- OAuth scopes
- Expiry & revocation

A2A: any Open API auth (API keys, OAuth, OIDC)

Continuous, adaptive, and dynamic authentication

What should you do?

For an organization

- MFA as soon as possible
- OAuth use via your IdP

For a service

- Only SSO with WebAuthn — no passwords
- Build OAuth scopes

Thank you

Get the slides: https://tinyurl.com/bsidesslc-auth