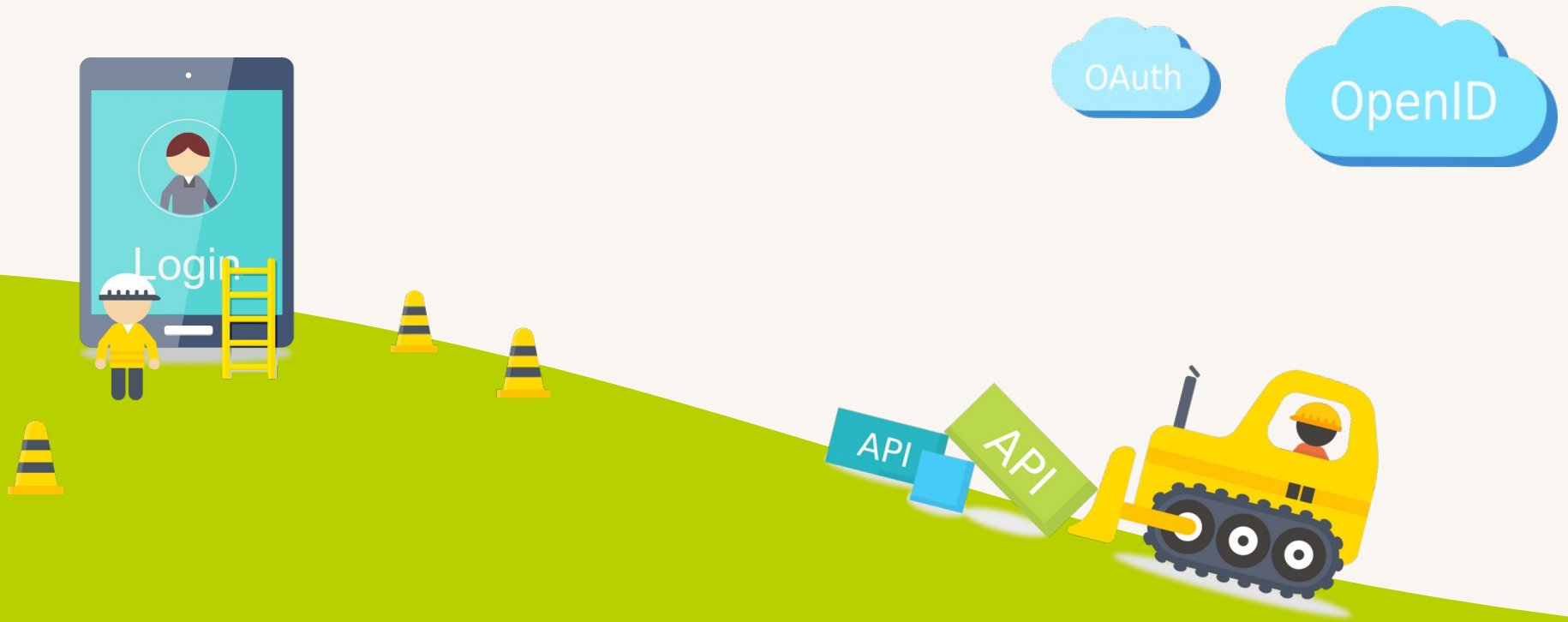
connect2id

CONNECTING APPS TO IDENTITIES



OpenID Connect & OAuth 2.0 Server for the Enterprise

Your enterprise server for

single sign-on

identity provision

identity federation

securing API access

The four Connect2id server pillars

Based on the latest standards

OpenID Connect

for ID tokens

OAuth 2.0 / 2.1

for access tokens

Modern token-based security for web, mobile and native applications

Identity and security profiles

FAPI
financial-grade API security

IdA / eKYC
verified identities and data, AML compliance

HEART
electronic health record access and exchange

iGov
international government assurance profile

Federation
operate hierarchical and mesh federations at scale

others to follow ...

Supported industry profiles for Open Banking, government / eID, health care

Engineered for

easy integration

365/24/7 uptime

scaling + performance

agile dev ops

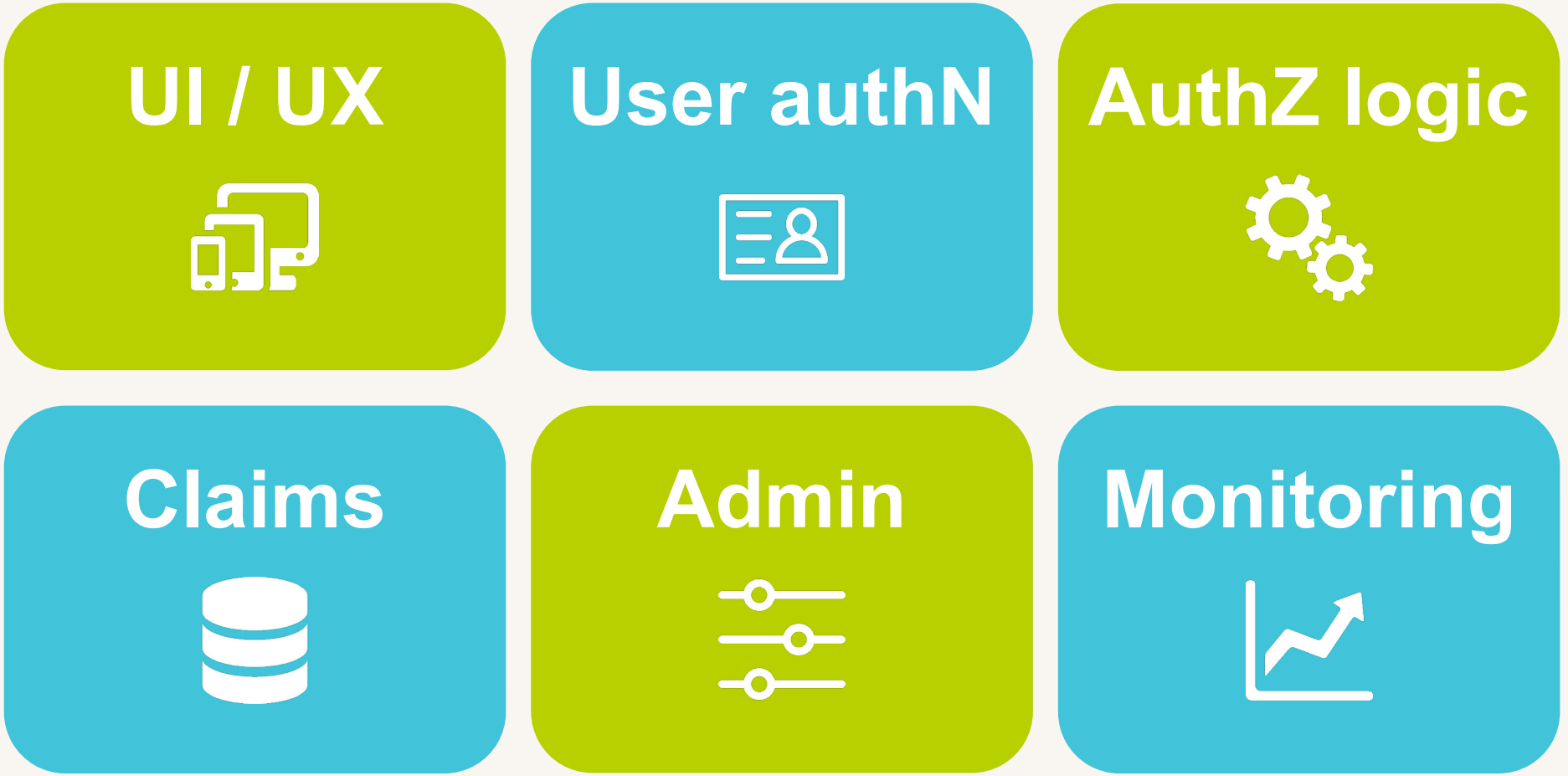
Move fast and with confidence

Providing identity services to

every 100th person*
on the planet,
and growing...

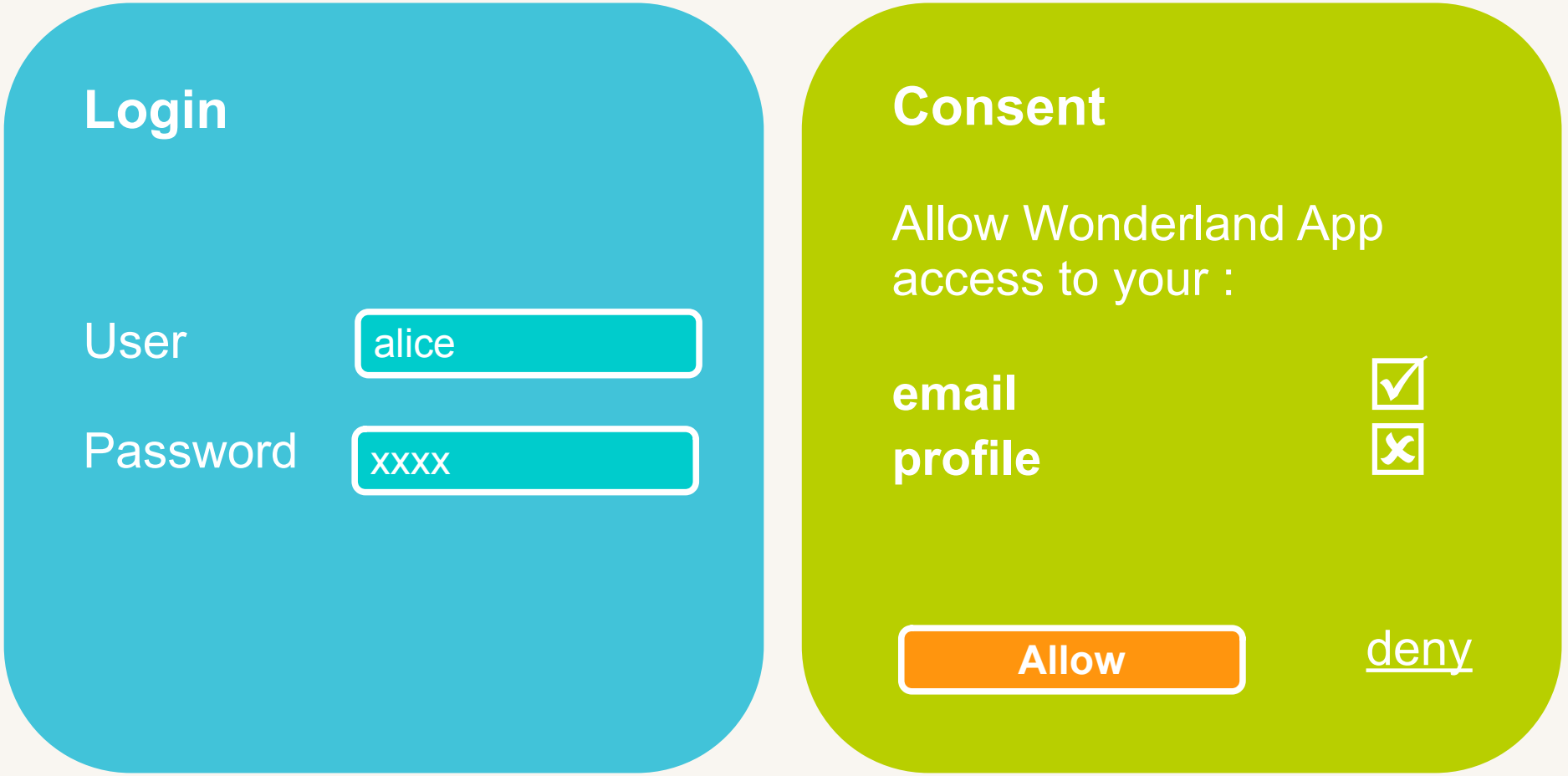
* 150+ mio end-users as of 2021

Easy integration



We want to liberate our customers. Smart web-based (REST + JSON) and native (Java SPI) integration for flexibility and performance.

Sign-in experience



Design your own branded user journeys around login and consent

Sign-in experience

- A powerful state-machine based web API lets you devise sign-in and consent user journeys tailored specifically to your business and security needs.
- You are free to use any language and framework for your UI and authN / authZ logic. Leverage your existing developer skills and IT assets to save time and money.
- Zero service downtime for user journey updates.
- You can even have multiple isolated sign-in journeys, for example one for employees, another for contractors and a third for customers.

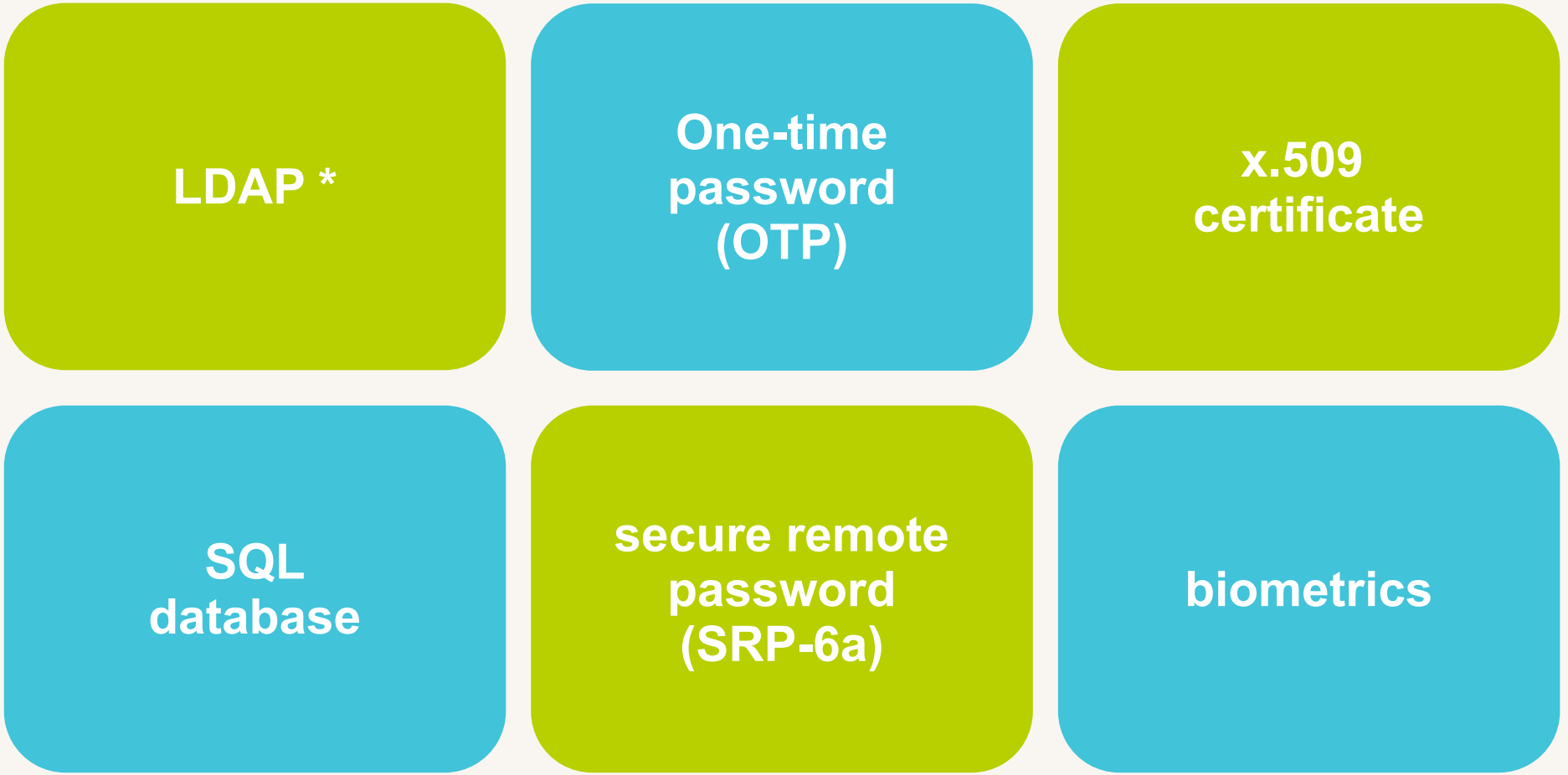
User authentication

- Any type of user authentication can be plugged in via the login web API to meet your security requirements.
- Microsoft Active Directory / LDAP authentication is supported out of the box.
- You're free to integrate other authentication methods for MFA, such as one-time passwords or biometrics.
- The Connect2id server doesn’t deal with the user credentials directly, which is good for security.

Submitting a user authentication

```
{
  "sub"       : "alice",
  "auth_time" : 1604392924,
  "acr"       : "c2id.loa.high",
  "amr"       : [ "pwd", "otp"]
}
```

Example authentication methods

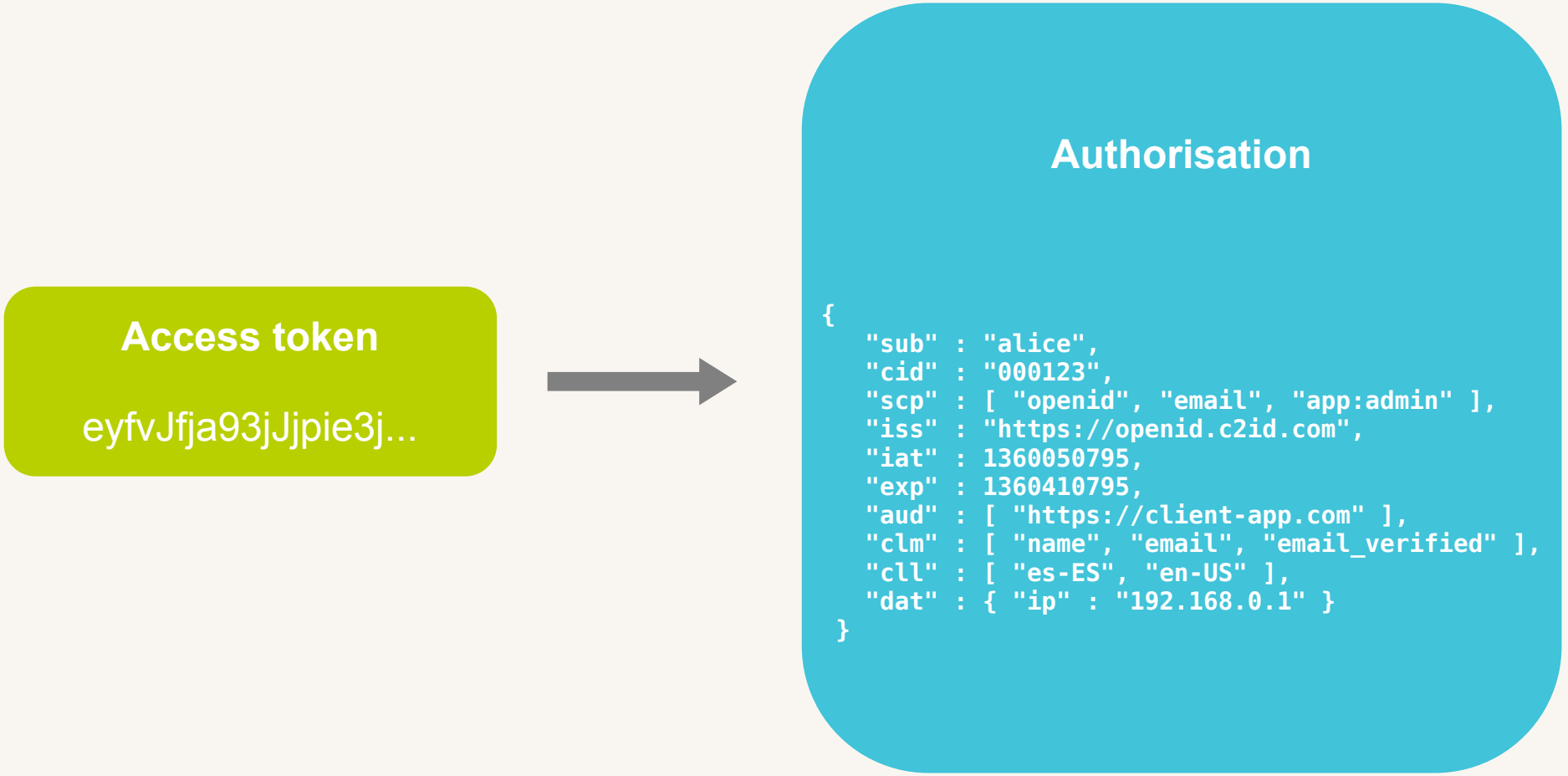


* Supported out of the box

Your OAuth 2.0 authorisation server

- The Connect2id server can act as an OAuth 2.0 authorisation server to issue access tokens to clients.
- Supports all core OAuth 2.0 grants: code, implicit, password, client credentials. Additionally: SAML 2.0 and JWT Bearer assertion grants, token exchange grants.
- Issue self-contained (JWT) as well as identifier-based bearer access tokens. JWT-encoded access tokens are ideal for distributed applications.
- The issued tokens can be client x.509 certificate (mTLS) or DPoP bound for extra security in financial (FAPI) and other applications.
- You can plug in arbitrary logic for consent (explicit / implicit), to customise tokens and their introspection.

Access token attributes



Access tokens can be decoded and verified on the spot (JWT)

or inspected at a Connect2id server endpoint

Manage existing authorisations

- Web API to query and manage the authorisations for every user and client application.
- The user authorisations can be flagged to be persisted so that the consented scope values and claims are remembered for subsequent logins.
- You can build a UI or a risk management agent to revoke tokens for a user, client or combination thereof.

Revocation UI

Alice : Your authorised apps

- **Wonderland App** [edit] [revoke]
- **Weather App** [edit] [revoke]
- **Bookstore App** [edit] [revoke]

Design your own UIs and tools for managing authorisations

UserInfo

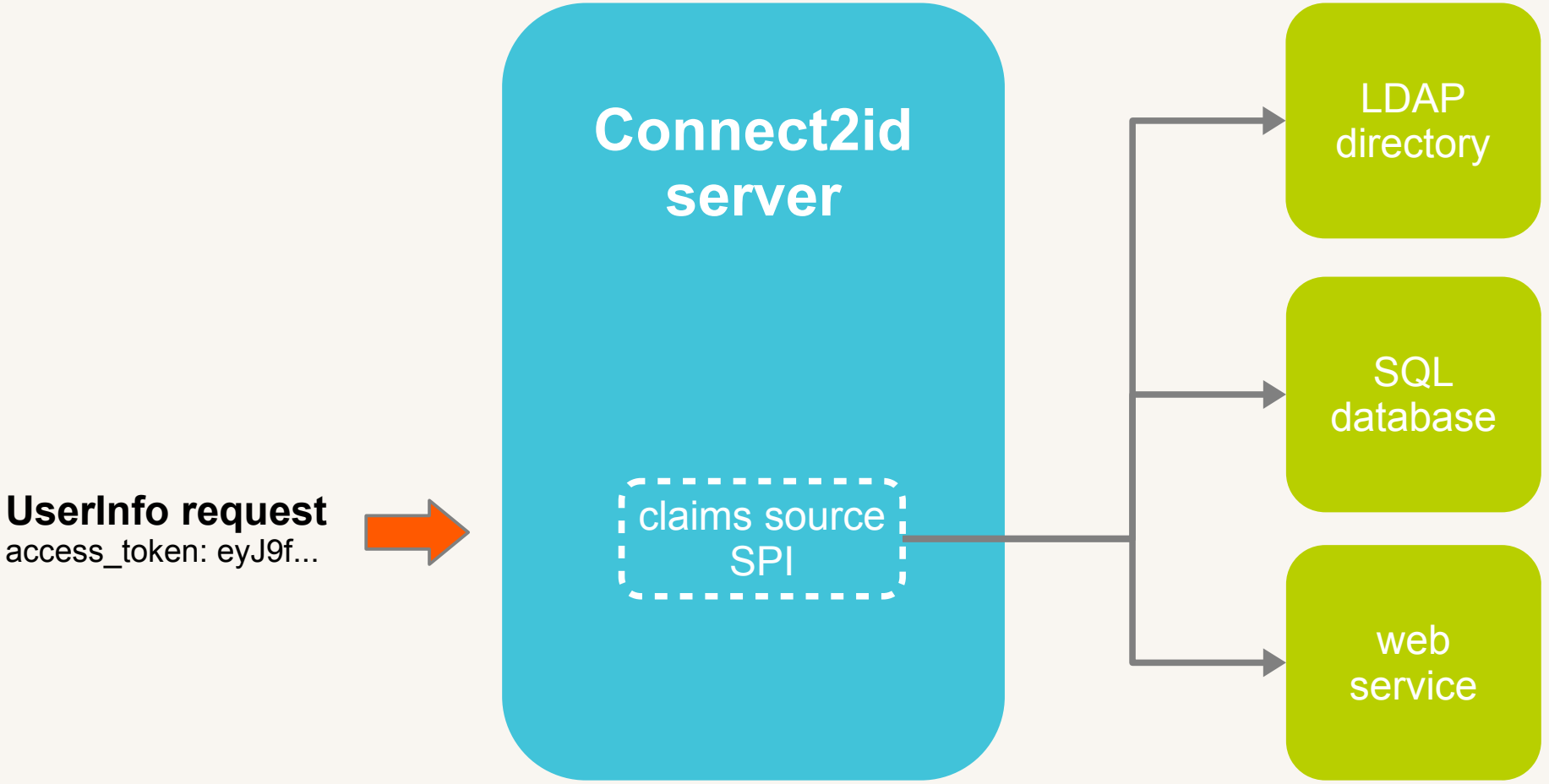
```
{
   "sub"            : "alice",
   "name"           : "Alice Adams",
   "given_name"     : "Alice",
   "family_name"    : "Adams",
   "email"          : "alice@wonderland.net",
   "email_verified" : true,
   "phone_number"   : "+359 (88) 200305",
   "profile"        : "https://c2id.com/users/alice",
   "ldap_groups"    : [ "audit", "admin" ]
 }
```

OpenID Connect defines an extensible JSON schema for releasing consented user details (OpenID claims) to client applications

OpenID claims sources

- OpenID Connect defines a simple extensible JSON schema for releasing consented user information (claims), such as name, profile and contact details, to client applications.
- The claims can be included in the ID token, returned at the UserInfo endpoint, or even fed into access tokens for resource server consumption.
- Support for verified claims and data (eKYC).
- Support for aggregation of claims from one or more data sources (LDAP directory, HR database, web service, etc).
- Claims sources can be integrated via a Java SPI or a web hook.
- Microsoft Active Directory / LDAP supported out of the box.

Claims source aggregation



OpenID claims aggregation from multiple data sources

Managing user sessions

- User sessions can be queried, monitored and managed via a dedicated web API (e.g. who is online?)
- The login page may store arbitrary attributes in the user session, to personalise the UI or for other purposes.
- Client applications can initiate standard logout requests.
- Clients can also receive standard front and back-channel logout notifications.

User session object

```
{
   "sub"           : "alice",
   "auth_time"     : 1604392924,
   "acr"           : "c2id.loa.high",
   "amr"           : [ "pwd", "otp" ]
   "creation_time" : 1604392924,
   "max_life"      : 20160,
   "auth_life"     : 1440,
   "max_idle"      : 15,
   "data"          : { "name"  : "Alice Adams",
                       "email" : "alice@wonderland.net" }
 }
```

Rich session attributes with support for arbitrary data

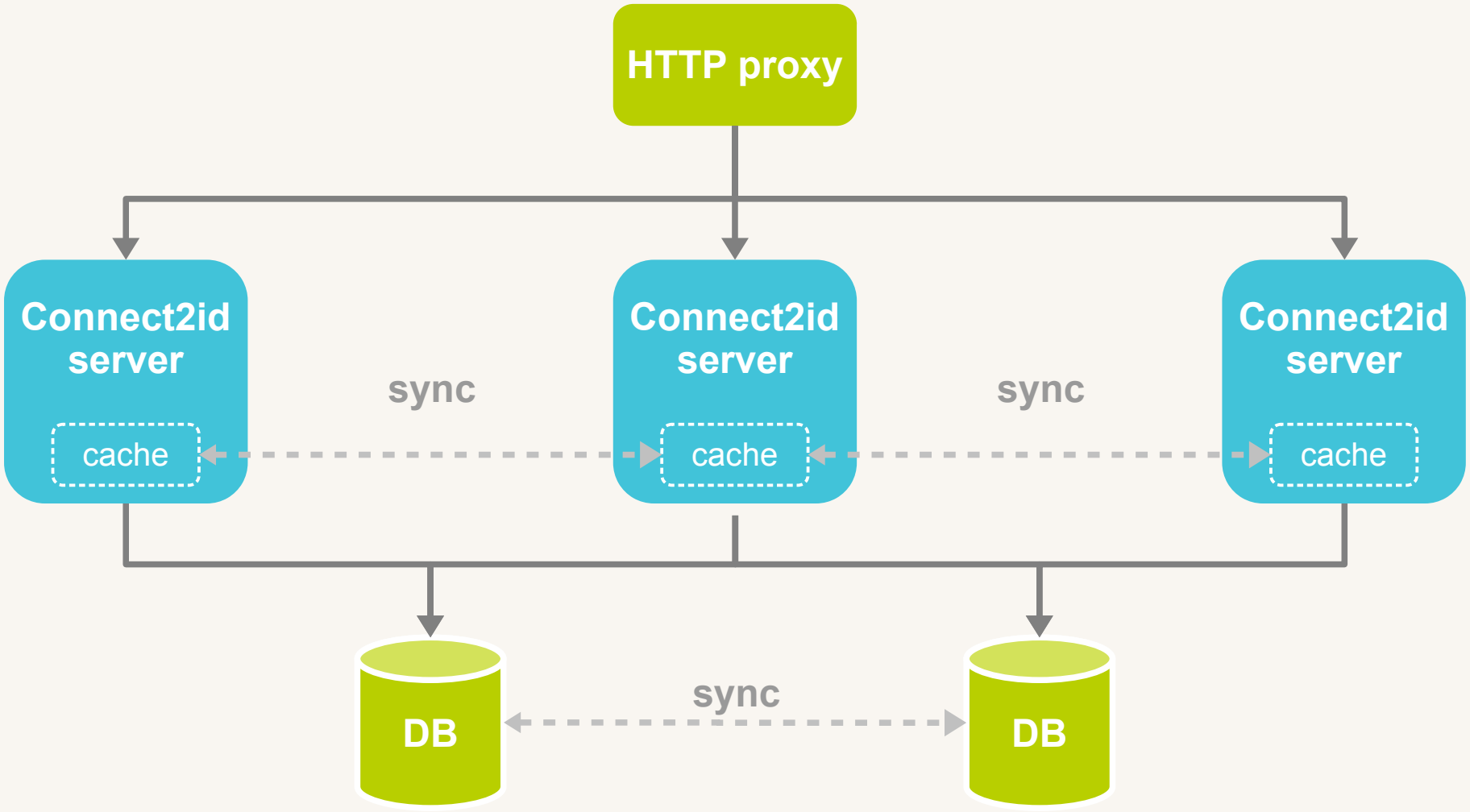
Engineered for 365/24/7 uptime

Identity services are critical to relying applications.

The Connect2id server is designed from the ground up for continuous availability:

- Avoiding single points of failure: the web service layer and the underlying database can be clustered for high-availability.
- Seamless scaling: server and database nodes can be added or removed to / from the cluster when required.
- Seamless upgrades: the software is designed for upgrades with zero disruption to service. Front-ends, OAuth 2.0 grant handlers and claims sources are decoupled from the main service.

Connect2id server cluster



Choice between stateless (with optional Redis cache) and replication clustering

Scaling + performance

- For small and medium organisations (~ thousands of users) the Connect2id server can be run in a VM with 1 CPU core and 2 GB RAM.
- Large user bases can benefit from a Connect2id cluster where the OpenID Connect / OAuth 2.0 requests are load-balanced over multiple nodes.
- Selected asynchronous operations for improved responsiveness.
- Connect2id server nodes can be dynamically added or removed to / from the cluster to match demand.
- Redis can be optionally deployed as primary cache.

Server monitoring

- Backend database health checks
- Monitoring endpoint with 120+ metrics:
  - sign-in activity
  - detailed endpoint stats
  - OAuth 2.0 grant handler stats
  - claims sources latency and performance
  - database latency and performance
- Token issue events for audit and accounting purposes

DevOps friendly

Key DevOps jobs can be done safely and without affecting the uptime of an operational Connect2id server / cluster:

- Updating the sign-in and consent user journeys or testing new ones;
- Upgrading the authentication method or incorporating additional second factors (e.g. FIDO OTP or biometrics);
- Updating the user and administrative interfaces for the service or introducing new ones;
- Updating the OpenID claim sources.
- Updating the OAuth 2.0 grant handlers.

To find out more about the Connect2id server

https://connect2id.com/server