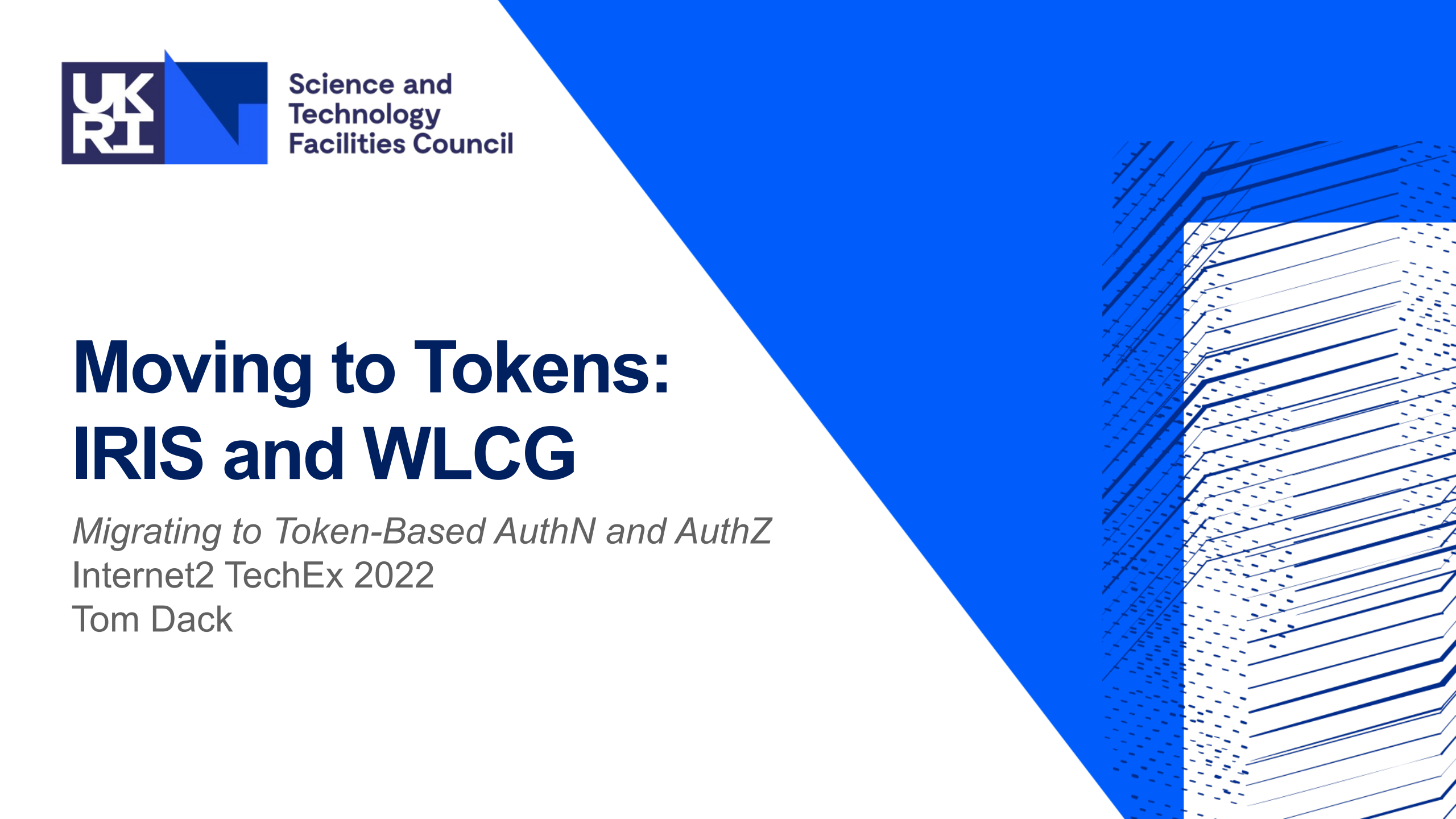

Moving to Tokens: IRIS and WLCG

Migrating to Token-Based AuthN and AuthZ

Internet2 TechEx 2022

Tom Dack

IRIS

- *e**I**nfrastructure for **R**esearch and **I**nnovation for **S**TFC*
- A coordinating body for the provision of STFC eInfrastructure
- Common elements are required for IRIS resources to function as a coherent infrastructure
  - Policy and Trust Framework
  - ***Identity Management***
  - Resource Accounting
  - Monitoring

WLCG

- ***W**orldwide **L**HC **C**omputing **G**rid*
- Replacing existing X509 + VOMS system with token flows
- Working towards token support across the full WLCG stack

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Motivations for Migration

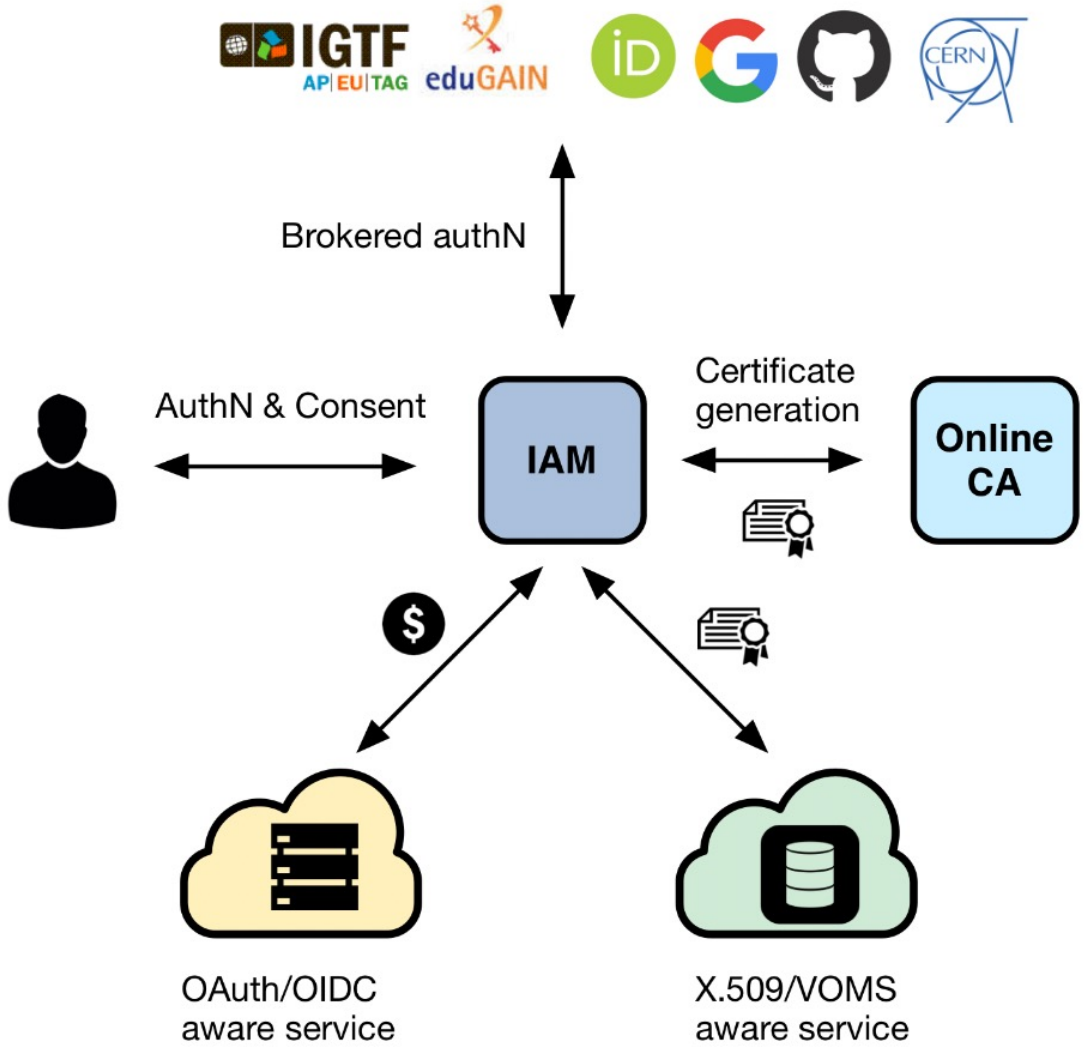
- There is a landscape shift away from X.509 user certificates
  - *Not user friendly*
  - *Mobility issues – moving certificates around*
  - *Interoperability issues with the broader federated infrastructure landscape*

- Shift towards OAuth2 and OpenID Connect (Tokens)
  - *Tokens widely accepted*
  - *Easy to implement – used by major industry players*
  - *Links directly to home institutions*

WLCG & IRIS use INDIGO IAM

An authentication and authorization application that

- supports **multiple authentication mechanisms**
- provides users with a **persistent**, **organization scoped** identifier
- exposes **identity information**, **attributes** and **capabilities** to services via **JSON Web Tokens** and standard **OAuth & OpenID Connect** protocols
- can integrate existing **VOMS**-aware services
- supports **Web** and **non-Web access**, delegation and **token renewal**



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INDIGO IAM and the AARC Blueprint Architecture for Infrastructures

Authentication and Authorisation for Research and Collaboration (AARC)

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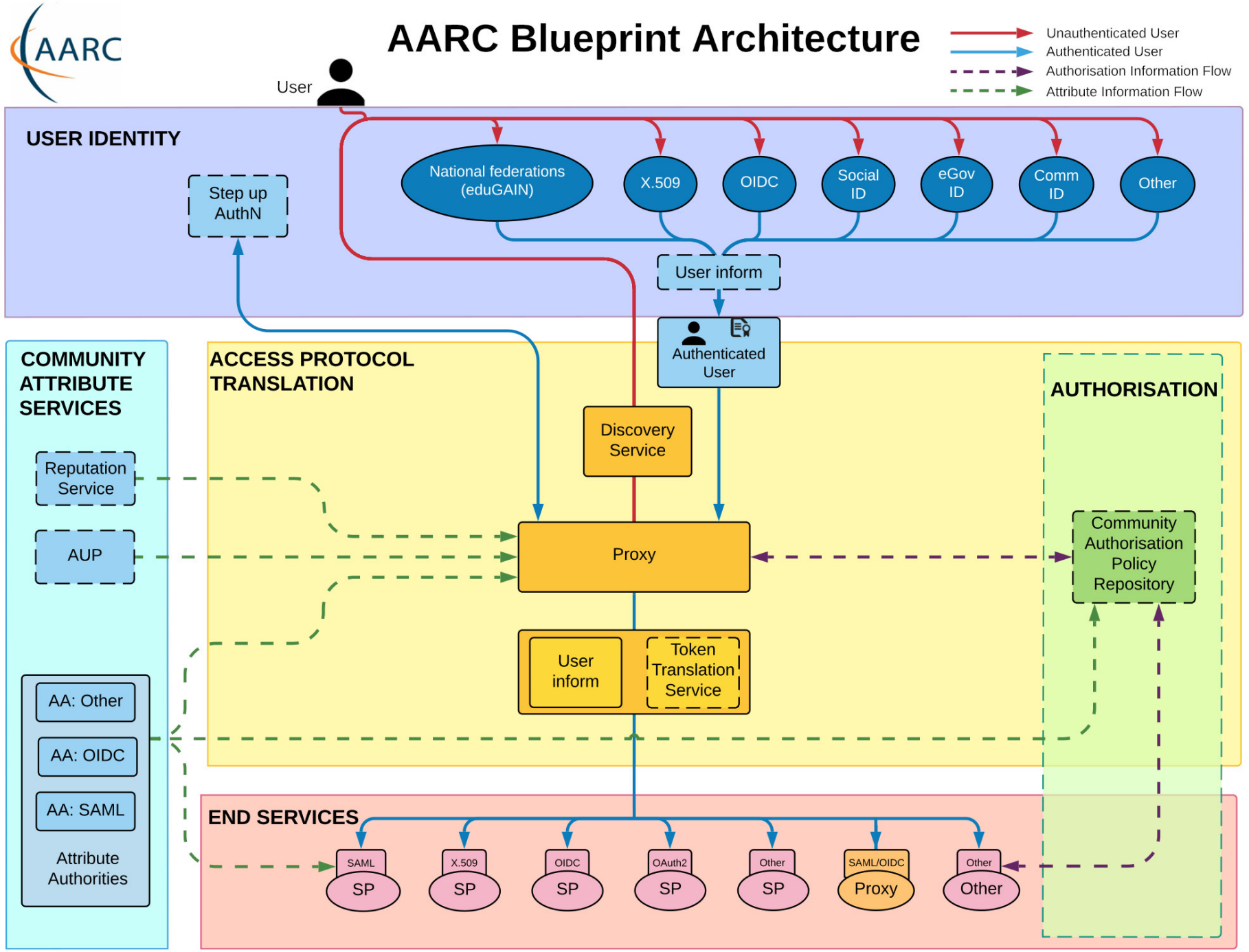

WLCG Token Schema

Common Claims

- sub
- exp
- iss
- acr
- aud
- iat
- nbf
- jti
- eduperson_assurance (REFEDS)
- wlcg.ver (WLCG)
- wlcg.groups (WLCG)

iss+sub used to uniquely identify a user, e.g. for blocking

wlcg prefix added to avoid collisions with other schemas

ID Tokens

- auth_time
- general OIDC Claims

Access Tokens

- scope (RFC8693)

Access tokens should include at least scope (capabilities) or group for authorization

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Note: Where unspecified, the origin is RFC7519 or OpenID Connect core

Token Status:

IRIS

- Multi-tenancy Identity Management Platform, serving multiple IRIS communities
- IRIS IAM is a production service, providing AuthN/Z to IRIS and STFC communities
- Primary authentication to IRIS services, including Accounting Portals, IRIS DynaFed (Storage), MISP Security Portal and OpenStack Clouds

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WLCG

- IAM is in production for the four LHC experiments
  - Contents are automatically replicated from VOMS-Admin
- IAM VOMS endpoints can be used alongside the legacy VOMS services
  - In production for ATLAS and CMS
  - TBD for ALICE and LHCb
- ATLAS, CMS and SAM ETF can use tokens to submit jobs to HTCondor Ces
  - CEs on OSG, which only support tokens since May
  - Those jobs still use X509 VOMS proxies for data management etc.

The Big Challenges

- Token Lifetimes
  - *Token lifetime is typically short for security reasons – what happens with a job longer than the token*
  - *Current WLCG Pilot job submission token lifetimes are a few days*
    - *Allows times to resolve service incidents transparently*
    - *Only used in security handshakes with Ces*
  - *Refresh Tokens – potential security concerns*
- High Availability Operations
- Interoperability
  - *Following AARC guidelines where possible*

Challenges - IRIS

- How to provide access to services which operate only over command line
  - *OAuth Device Code PAM with Group Authorization*
  - *https://github.com/stfc/pam_oauth2_device*
- Assurance for users who do not have an eduGAIN IdP
  - *Using the AAI platform as an Identity-Provider-of-last-resort*
  - *”Community” IAM instances with local credentials acting as IdPs*

Challenges - WLCG

- Support Level
  - *Staff availability and service reliability has caused issues here*
- Phasing out VOMS-Admin
  - *User, group, and role management needs to migrate to IAM*
  - *Transition phase will require supporting both in tandem*

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Questions?

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Thank you

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