Identity and Access Management Infrastructure for Oxford University

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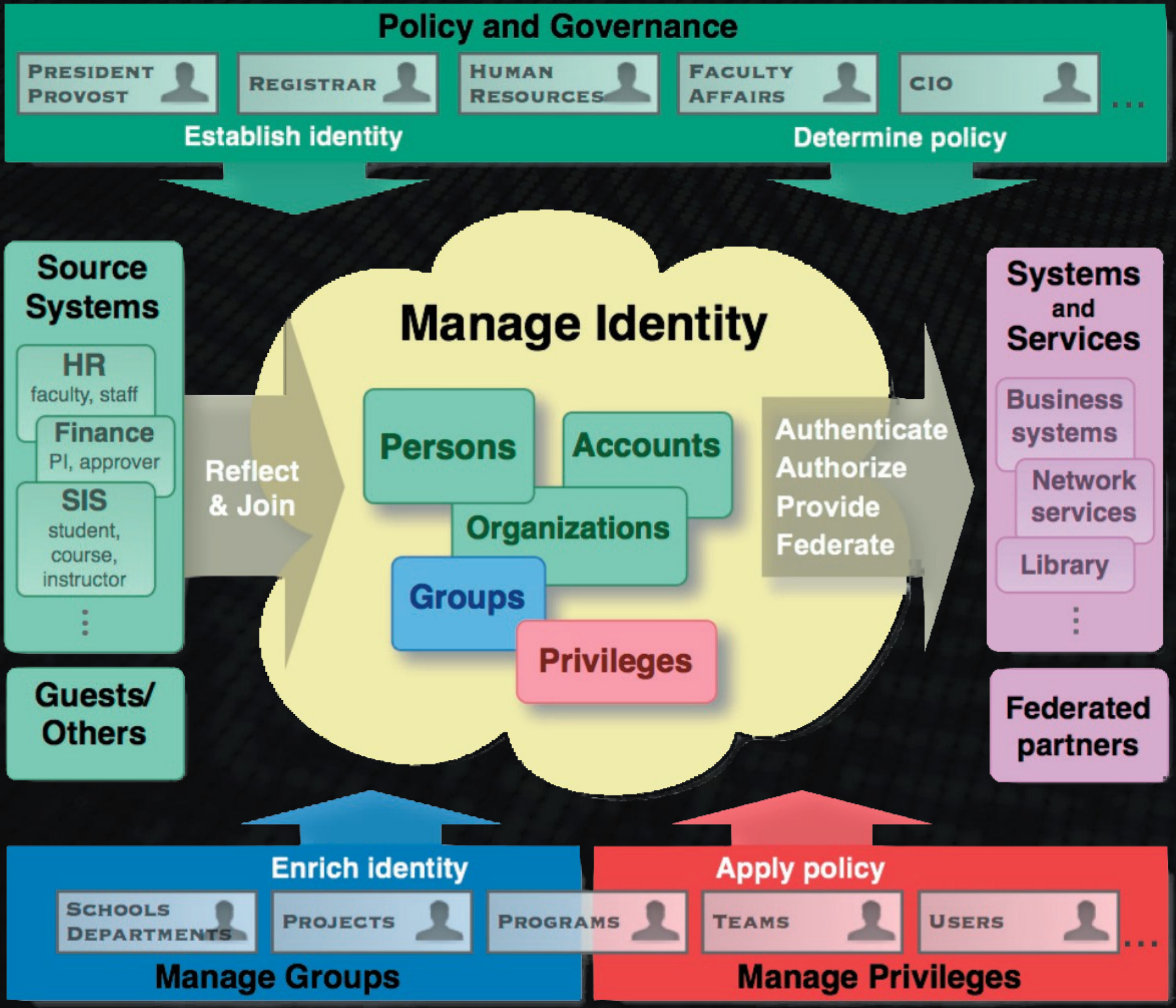
UNIVERSITY OF OXFORD

Identity and Access Management



Digital Identity

The electronic representation of a real-world entity: a "user"

Authentication

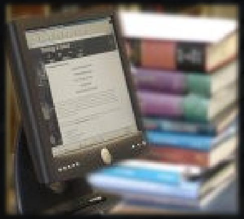
The process by which a user proves their claim to a specific digital identity

Authorisation

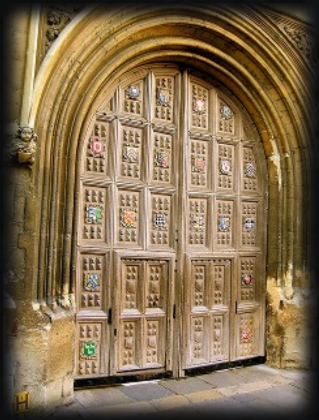
The process of defining who can access what (& enforcing that policy)

Oxford's IAM Context

Gmail



ExLibris



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Oxford University Computing Services
www.oucs.ox.ac.uk

Organisation

44 colleges/PPH
168 departments
28 libraries
27 others

IT Staff

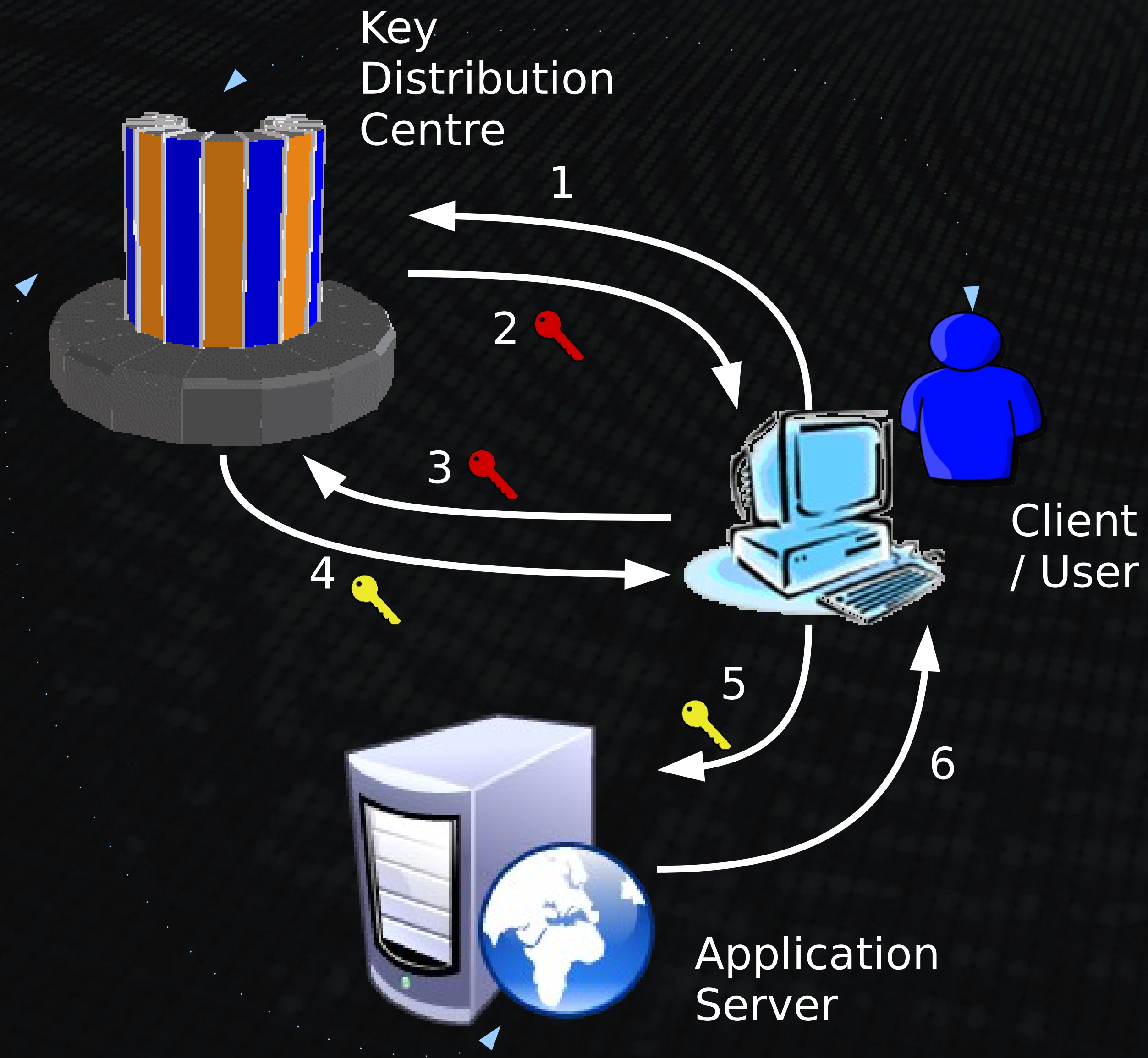
300-400 ITSS

Platforms

Microsoft
IBM/Oracle
Linux
Novell
Apple OS X
Sun

Current Services

Kerberos



Key Points

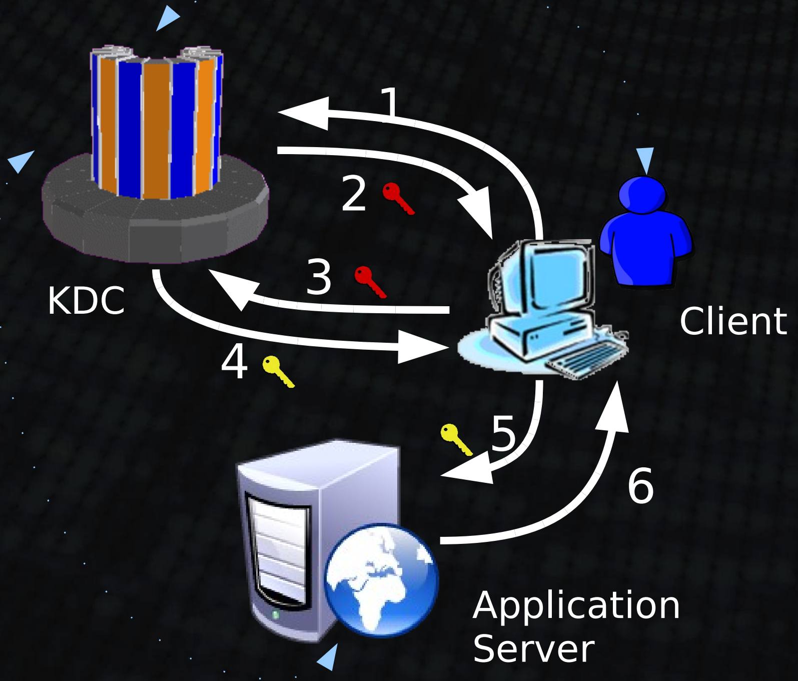
Passwords / hashes are not transmitted during authentication

Different keys for each application server

Single sign-on capability and good resilience model

Kerberos

- Preferred authentication protocol in Active Directory
- Suitable for any Kerberised service, implementations for SMB/CIFS, SSH, IMAP, SMTP, Active Directory
- Resilience through clustering of KDC and client-side failover



Available Since:

2002

Active Users:

33,000

Registered Servers:

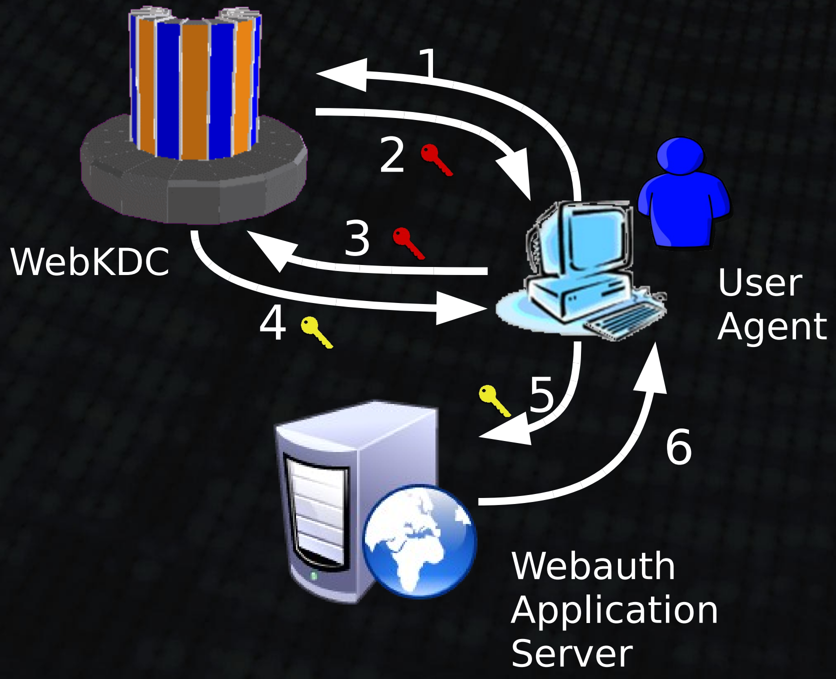
1,200

Logins/Day:

27,000

Webauth

- Wraps Kerberos tickets in web cookies
- Available as Apache module, included in popular Linux distros
- Support for HTTP-Negotiate, WAS-initiated re-auth, …
- Supplementary module to lookup user attributes in LDAP



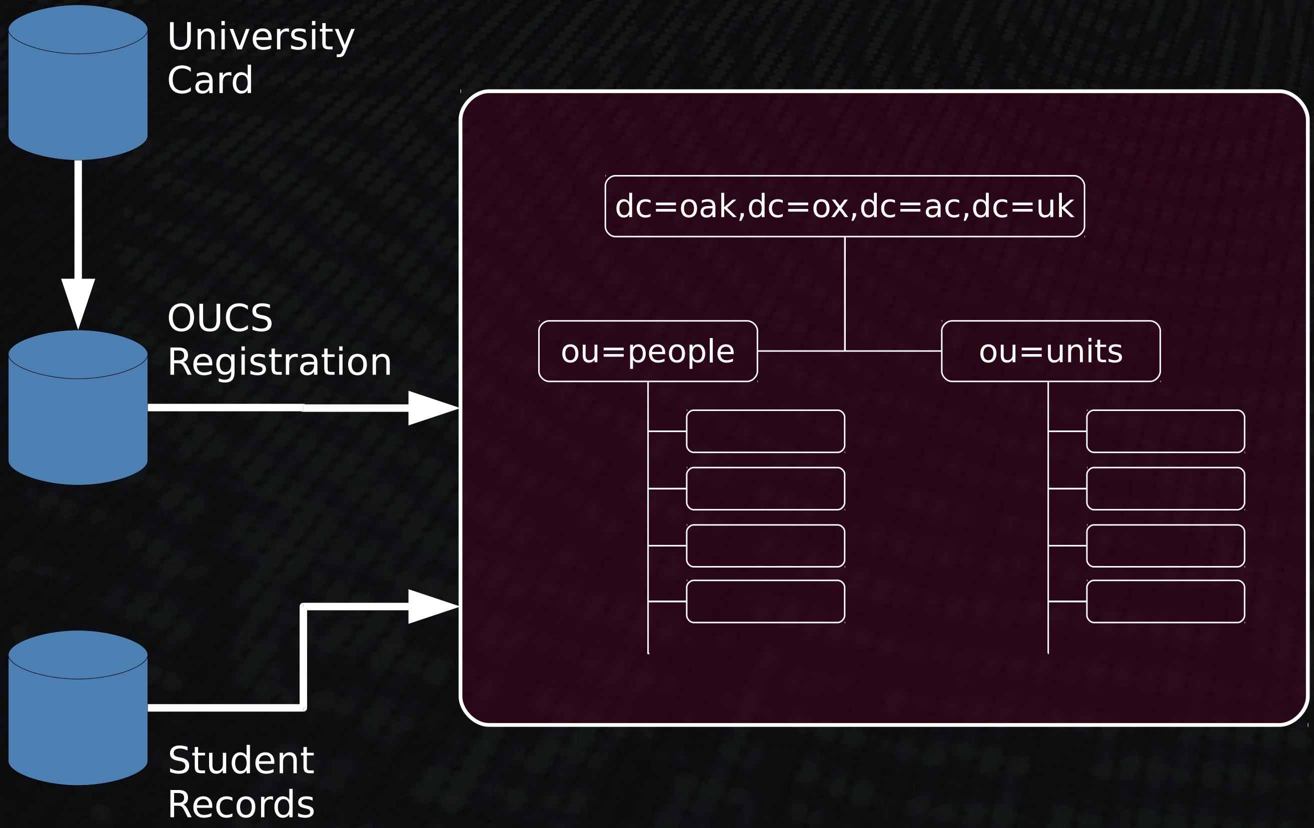
Available Since:
2002

Active Users:
33,000

Registered Servers:
385

Logins/Day:
6970

Oak LDAP



Available Since:

2008

Active Users:

n/a

Registered Servers:

189

Queries/Day:

180,000

Oak LDAP

```
dn:                     oakPrimaryPersonID=8455,ou=people,...
cn:                     Nate Pobridge
o:                      University of Oxford
ou:                     Department of Computer Science
displayName:            Nate Pobridge
sn:                     Pobridge
givenName:              Nate
mail:                   nate.pobridge@cs.ox.ac.uk
eduPersonOrgDN:         dc=ox,dc=ac,dc=uk
eduPersonAffiliation:   member
eduPersonOrgUnitDN:     oakUnitCode=cs,ou=units,dc=oak,...
eduPersonPrimaryOrgUnitDN: oakUnitCode=cs,ou=units,dc=oak,...
oakAlternativeMail:     nate.pobridge@cs.ox.ac.uk
oakPersonID:            8455
oakUniversityBarcode:   2201423
oakUniversityCardID:    10037759
oakCardExpiry:          20120101000Z
oakOSSID:               52683314
oakStatus:              senmem
oakOxfordSSOUsername:   alic3000
oakITSSFor:             oakGN=ITSS,oakUnitCode=cs,ou=units,...
memberOf:               oakGN=ITSS,oakUnitCode=cs,ou=units,...
memberOf:               oakUnitCode=cs,ou=units,dc=oak,dc=ox,...
objectClass:            oakPerson
objectClass:            eduPerson
```

Available Since:

2008

Active Users:

n/a

Registered Servers:

189

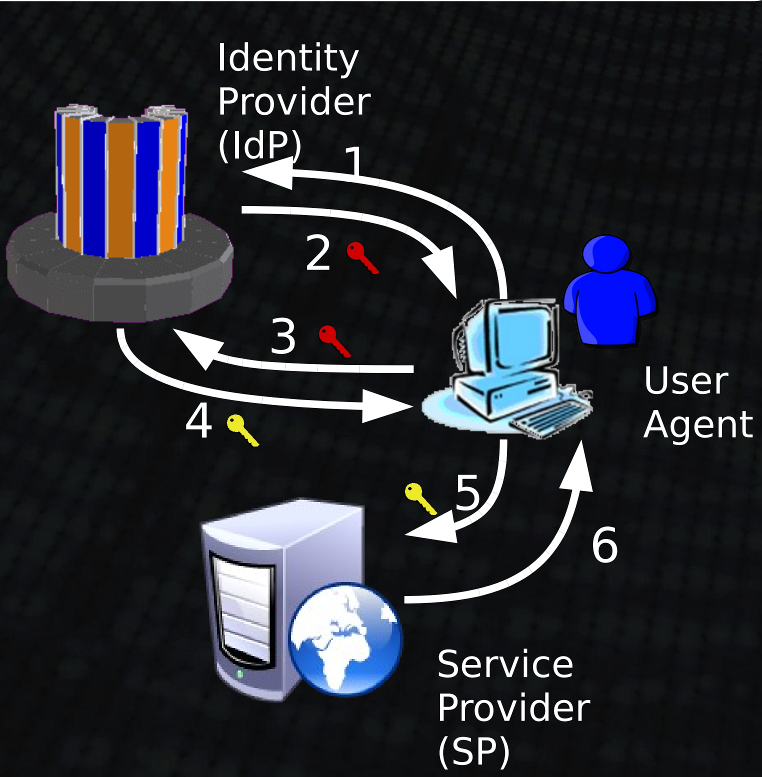
Queries/Day:

180,000

Shibboleth

Windows

- Software implementation of SAML Web Browser Profile
- Available as Apache module, included in popular Linux distros
- Available as **ISAPI filter for IIS (5,6,7) on Windows 2003**
- User attributes requested / returned in initial sign-on



Available Since:

2007

Active Users:

22,500

Registered Servers:

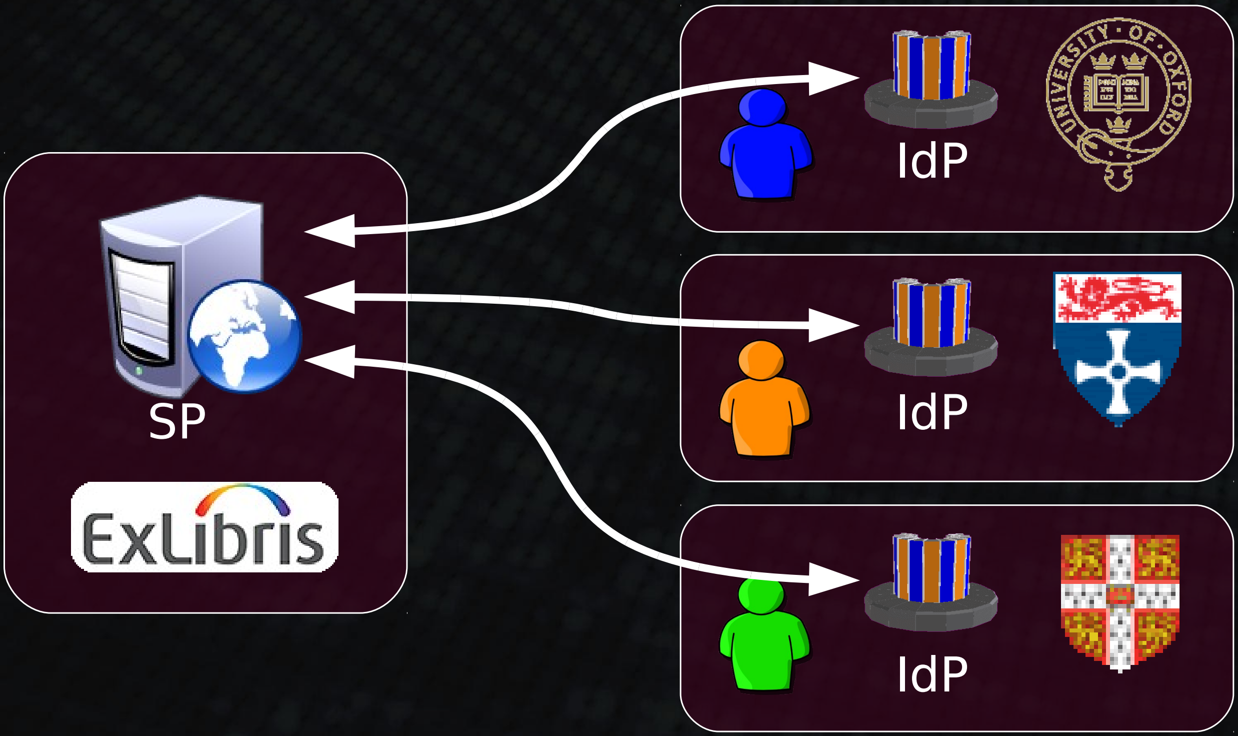
31

Logins/Day:

6742

Shibboleth

- Supports federated access management
- Enables 3rd parties to rely on our authentication of our users
- Enables us to rely on 3rd parties
- Enables us to federate internally



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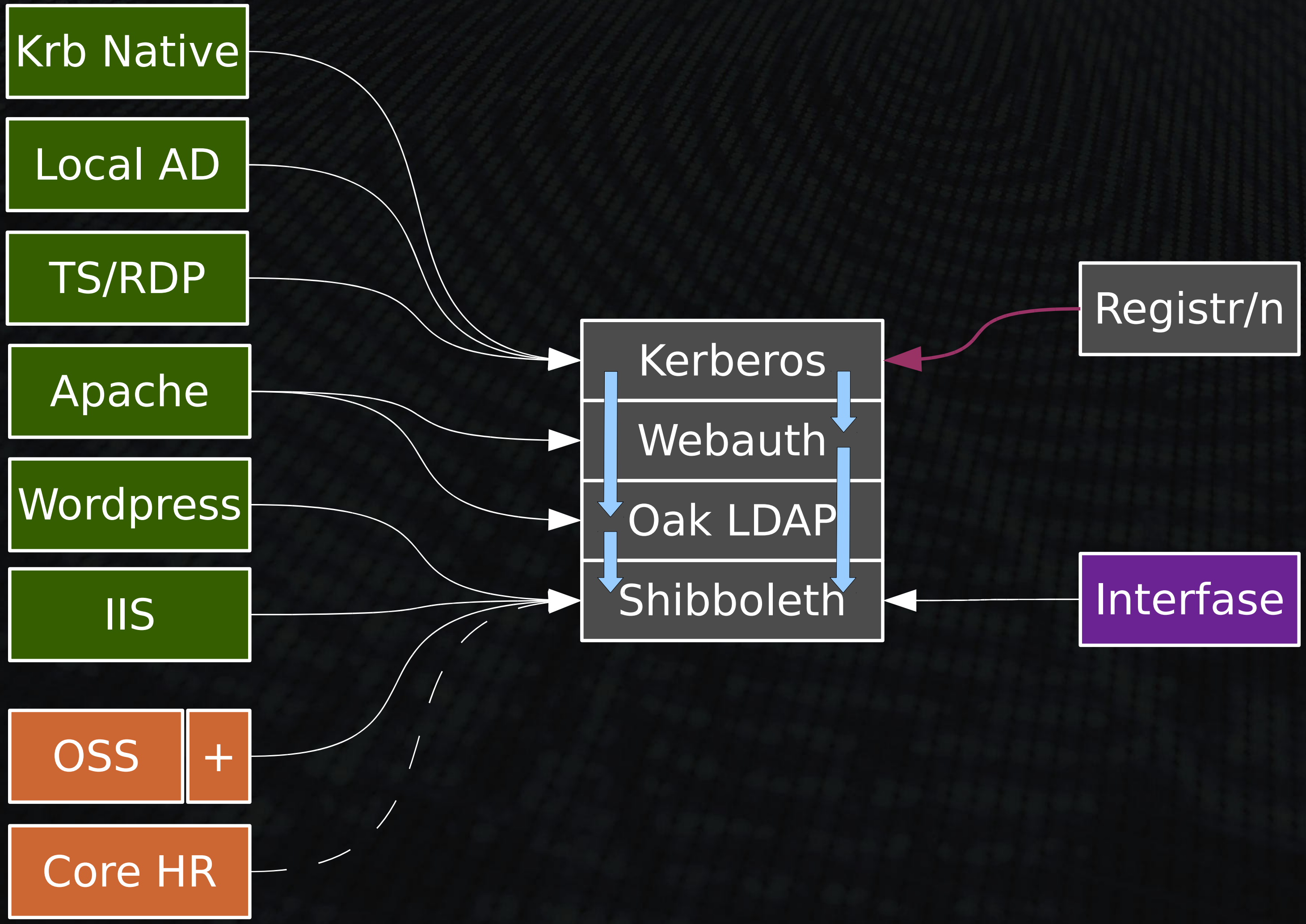
IAM Suite


Krb Native
Local AD
TS/RDP
Apache
Wordpress
IIS
OSS
+
Core HR
Kerberos
Webauth
Oak LDAP
Shibboleth
Registr/n
Interfase

Current Projects

Core User Directory

- Provide a comprehensive central directory of people
- Consolidate and match person records from many sources
- Include foreign keys to assist drilling into primary data sources

Start Date:

2011-01

Finish Date:

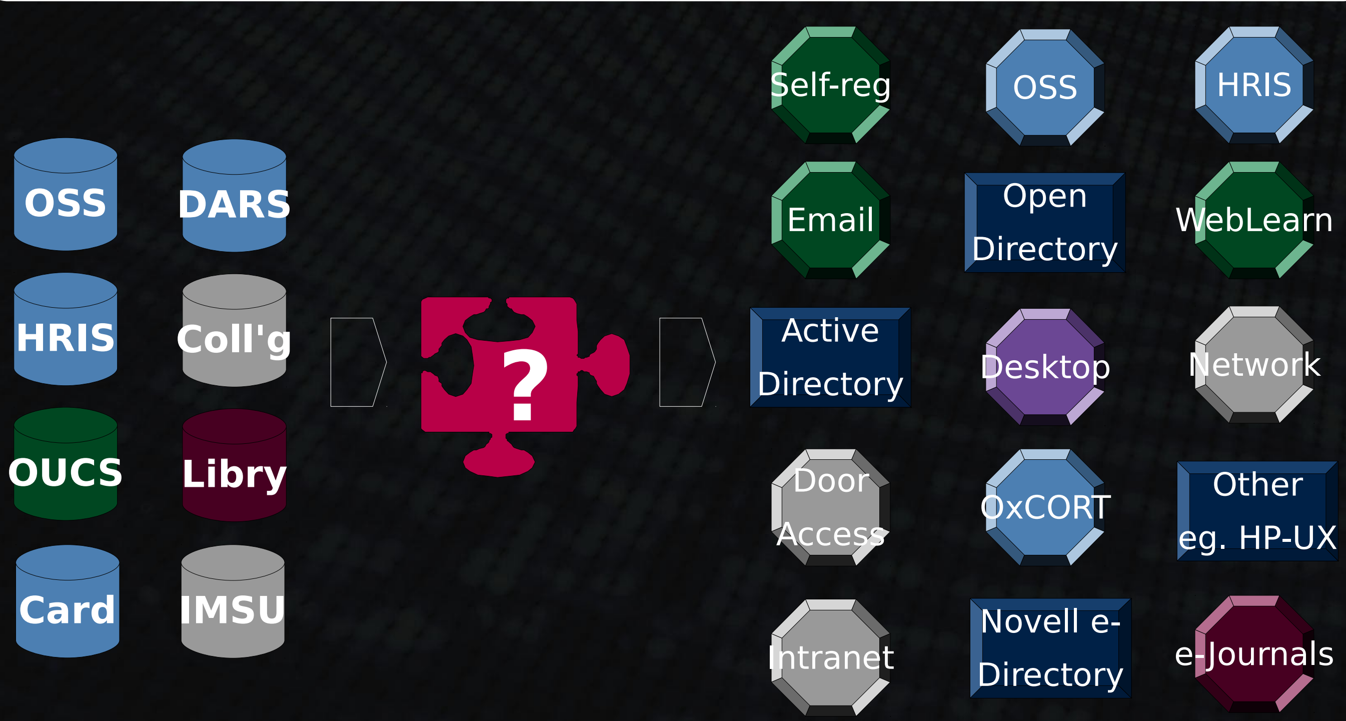
2012-06

Sponsor:

UAS IS Board

Staff:

2



Group Store

- Provide a central store for “managed” and “ad hoc” groups of people
- Currently running a development system based on Internet2 Grouper
- Project will be tied in against CUD as the services complement each other

Start Date:

2011-01

Finish Date:

Delayed

Sponsor:

OUCS

Staff:

1

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OXFORD

Oxford Active Directory

- SSO for AD using a cross-realm trust with Kerberos is available and works well for workstations in a domain, but…
- …there are doubts about support for this model from Microsoft and application vendors
- Our plan is to carry out rigorous testing of a typical Microsoft AD deployment for an organisation like Oxford…
- …and deploy an Oxford Active Directory domain if this looks beneficial

Windows Server®
Active Directory

Start Date:
2011-07

Finish Date:
2011-10

Sponsor:
OUCS

Staff:
2

Multi-factor Authentication

- Joint OUCS & Student Administration project
- Provide “enhanced authentication” for access to draft examination papers in VLE (WebLearn)
- Pilot solution based on SAML2 with one-time password delivered via SMS
- Infrastructure modifications suitable for general use

Start Date:

2011-01

Finish Date:

2011-09

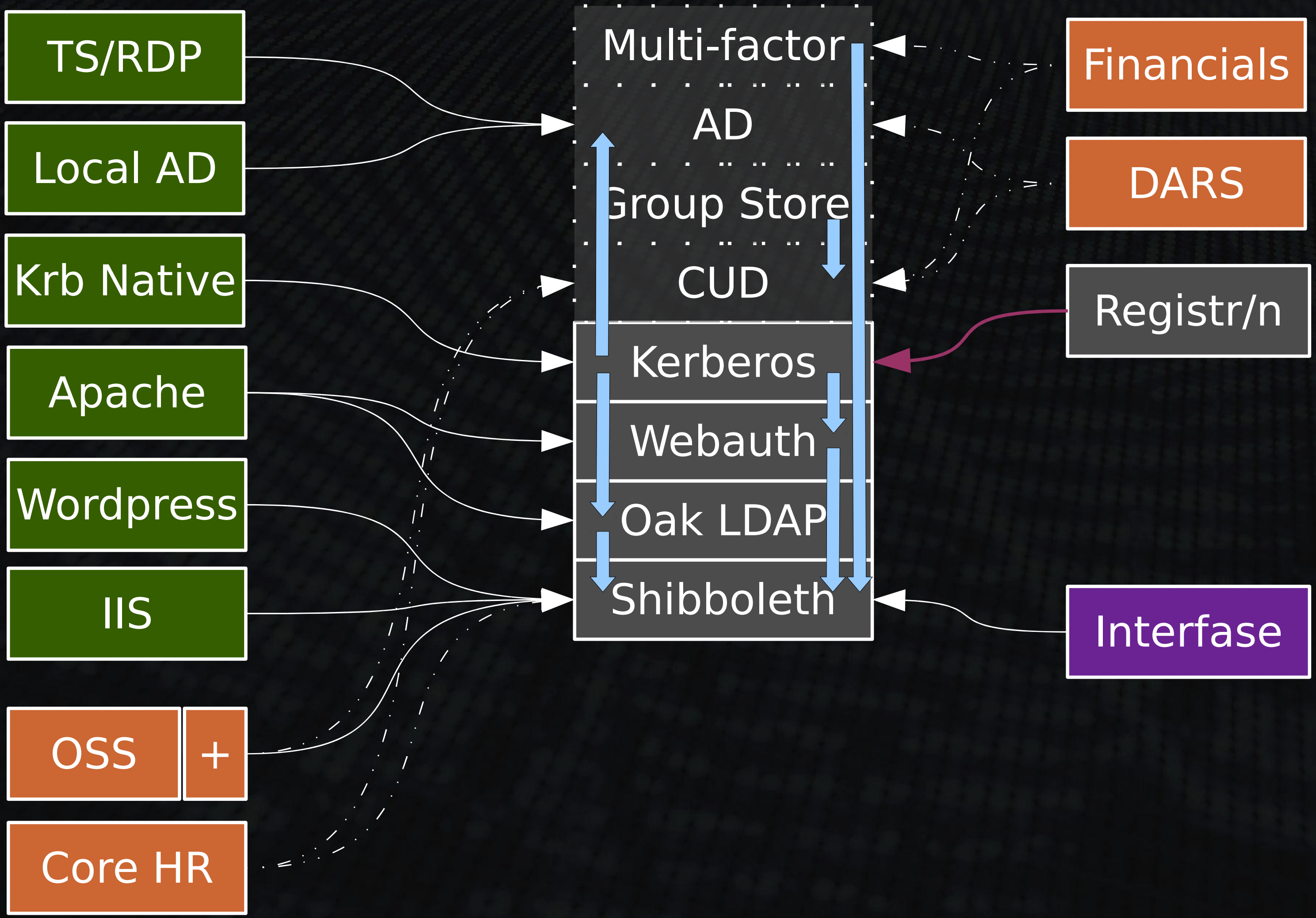
Sponsor:

UAS IS Board

Staff:

3

Enhanced IAM Suite



Future Projects?

Further Work

- There are still use cases that are not well supported
  - Commercial products which only support proprietary authentication
  - Products which "authenticate against LDAP"
- There is something awkward about Alumni needing to get a new login to access DARS
- Issuing credentials to new users is inefficient and not particularly secure
- There is a growing demand to be able to support non-members
  - Potential applicants (student & staff)
  - 40,000 library readers

Some Ideas

Middleware solutions to handle IAM suite integration for difficult applications

SSO "for life" - we don't reuse usernames anyway

SSO "for all" with online self-registration

Questions

Please do use the feedback forms to request workshops covering any aspects in more detail

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