SIMPLE, TRUSTED ACCESS – ANYWHERE, ANYTIME, ON ANY DEVICE

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RA21 has roots back to 2015 with a movement from corporate librarians as represented by the Pharma Documentation Ring (P-D-R).

- Indicated that IP address recognition as a means of providing services to corporate researchers was no longer meeting their needs.
What we decided we would need...

1. SOLUTION
   - Single Sign On (SSO)
   - Open Standards (eg SAML)
   - Inside/Outside Network

2. PUBLISHER SUPPORT
   - Standard Adopted by All STM Publishers
   - Granular Usage Stats
   - Privacy & Security
Background (cont.)

- June 2015: P-D-R holds a special meeting on Authentication Technologies
- June 2016: Copyright Clearance Center hosts Universal Resource Access Forum involving P-D-R members, publishers, software providers, etc.
- July 2016: URA Task Force was formed
- Mid-2016: STM forms parallel effort, RA21, in partnership with NISO
- End of 2016: URA Task Force becomes Corporate Pilot of RA21
RA21 Industry Participation

- Individuals from more than 60 different organizations have been involved in RA21 since its inception in late 2016.
The need for RA21

Simple access to content needs to be fixed, especially for off campus use:

• Scholarly content & services are increasingly being accessed from outside of corporate/campus networks
• Publisher pathways for providing off-network access have not kept pace with our experience on the consumer web (e.g. Google, Facebook, LinkedIn logins across multiple sites).
• When accessing publisher platforms off-network, fully entitled end users are turning to alternative resources (e.g. SciHub, etc.) because of ease of access.
• RA21 has been established as the first step in the journey towards replacing the now outdated IP based access & authentication model.
Current Off-Campus Solutions are Unsatisfactory

- VPN/Proxy Servers
Current Off-Campus Solutions are Unsatisfactory

- VPN/Proxy
- Device Pairing
Current Off-Network Solutions are Unsatisfactory

- VPN/Proxy
- Device Pairing
- Other “Access Brokers”

Google Scholar
Campus Activated
Subscriber Access (CASA)
Current Off-Network Solutions are Unsatisfactory

- VPN/Proxy
- Device Pairing
- Access Brokers

All Leverage Institutional IP Address Recognition

All Require User Setup In Advance
**RA21 vs. “Access Brokers”**

Position statement was published contrasting RA21 with “Access Brokers” (e.g. Kopernio, Anywhere Access, and CASA)

### “Access Brokers” vs. RA21

<table>
<thead>
<tr>
<th>“Access Brokers”</th>
<th>RA21</th>
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<tr>
<td>Typically require creation of individual user accounts, potentially compromising privacy.</td>
<td>RA21 follows long-standing practices in scholarly federated identity management in the academic sector by providing the option for users to remain anonymous.</td>
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<td>Often capture and store a copy of the user’s institutional username and password, potentially creating a security risk.</td>
<td>RA21 ensures that the user’s institutional username and password are only visible to the user’s home institution.</td>
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<td>Are often paid services, provided by libraries and configured by end users.</td>
<td>RA21 will be free for subscribing institutions and require no configuration on behalf of end users.</td>
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<td>Access Brokers may enable the provider of the software/solution to gain insights on end user behavior and reading habits across publisher sites.</td>
<td>RA21’s decentralized, federated model provides no mechanism for tracking user behavior across publisher sites.</td>
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<td>Must be installed or configured by end users prior to starting a research discovery journey. Must be installed on all devices under the user’s control.</td>
<td>RA21 eliminates the need for any additional software or end user configuration. RA21 will ensure simple access to scholarly resources from anywhere, on any device, at any time.</td>
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Surely there is a better way...

Access to scholarly content, especially off-network, needs to be fixed

• Federated authentication using SAML (“Shibboleth”) solves most of the problem
  – Multilateral trust
  – Mature technology
  – Widely deployed and supported by scholarly information providers
  – Widely adopted and deployed by academic institutions
  – Increasingly deployed by corporate customers given the rise of SaaS platforms (if you’ve signed into Slack recently, you’ve used SAML!)
Strong support among the research community for federated identity management to improve collaboration

- FIM4R.org has produced two whitepapers recommending improvements to the federated identity infrastructure to support research collaboration
- Participants include
  - CLARIN, European Research Infrastructure for Language Resources and Technology
  - DARIAH, Digital Research Infrastructure for the Arts and Humanities
  - ELIXIR, Life Sciences
  - ESA, European Space Agency
  - INAF, Italian National Institute for Astrophysics
  - LIGO, Laser Interferometer Gravitational-Wave Observatory
  - Umbrella, Photon and Neutron Science
  - WLCG, Worldwide LHC Computing Grid (High Energy Physics)

“Every researcher is entitled to focus on their work and not be impeded by needless obstacles nor required to understand anything about the FIM infrastructure enabling their access to research services. The recommendations ... highlight well-established practices ... whose widespread adoption would represent a huge boost to usability of federated access mechanisms by users engaged in collaborative research activities.”

So why RA21?

The current institutional discovery workflow is very difficult for users to navigate.
RA21 UX Challenge

• Seeks to implement seamless, convenient access to scholarly content while still preserving user privacy.

Typical Research Discovery Workflow
RA21 UX Challenge

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Typical Research Discovery Workflow
RA21 UX Challenge

• Seeks to implement seamless, convenient access to scholarly content while still preserving user privacy.

Typical Research Discovery Workflow
Preserving Privacy

Publishers receive attributes about the user, not the user's identity.

eduPersonAffiliation

- library-walk-in
- alum
- affiliate
- member
- student
- employee
- faculty
- staff
New Capabilities with Attributes
New Capabilities with Attributes

- **eduPersonAffiliation**
  - library-walk-in
  - alum
  - affiliate
  - member
    - student
    - employee
      - faculty
      - staff

- **Paying OA Fees**
  - £
  - €
  - $
RA21 Goals

Recommend new solutions for access strategies beyond IP recognition in joint collaboration with software vendors, libraries, federation operators, publishers and service providers

- Test and improve solutions by organizing pilots in a variety of environments  ✔️
- Establish best practices and publish via the NISO Recommended Practice process – in process, UX demo today
- Prepare for post-project phase by identifying potential parties to operate any necessary centralized infrastructure – in process
RA21 Current Status

Refinement and user testing continues, demo today.

Work on pilots has concluded. Corporate Pilot report was published in September 2018. Academic Pilot report was published in July 2018. - P3W architecture was selected.
RA21 Security / Privacy Analysis

Objective:

– Assess security and privacy risks associated with the technical architectures that were tested by the two pilots
– Provide recommendations tailored to mitigate risks identified for each

Methodologies used:

**STRIDE Threat Model for security**

- Spoofing Identity
- Tampering with Data
- Repudiation
- Information Disclosure
- Denial of Service
- Elevation of Privilege

**DPIA for privacy**

- Data Protection Impact Analysis
- Performed in compliance with GDPR
RA21 Security / Privacy Conclusion

• There are no significant risks which prevent RA21 from moving forward
• Residual risks from both security and privacy perspectives are LOW
• The nature of the data involved is low value, i.e., not directly or easily attributable to any natural person
• Appropriate safeguards are in place to mitigate confidentiality concerns
User Experience
UX Building Blocks

1. Consistent visual cue and call to action signals institutional access

2. Flexible and smart search
   - Search by institution name, abbreviation or email
   - Typeahead matching and URL

3. Remembered institution on next access
RA21 UX Goals

1. A user only encounters a discovery process once (per browser).

2. The user’s institution is persisted in browser local storage and subsequently rendered in the RA21 button across all participating publishers.
RA21 UX Demo