

Identity and Access Management for LIGO: International Challenges

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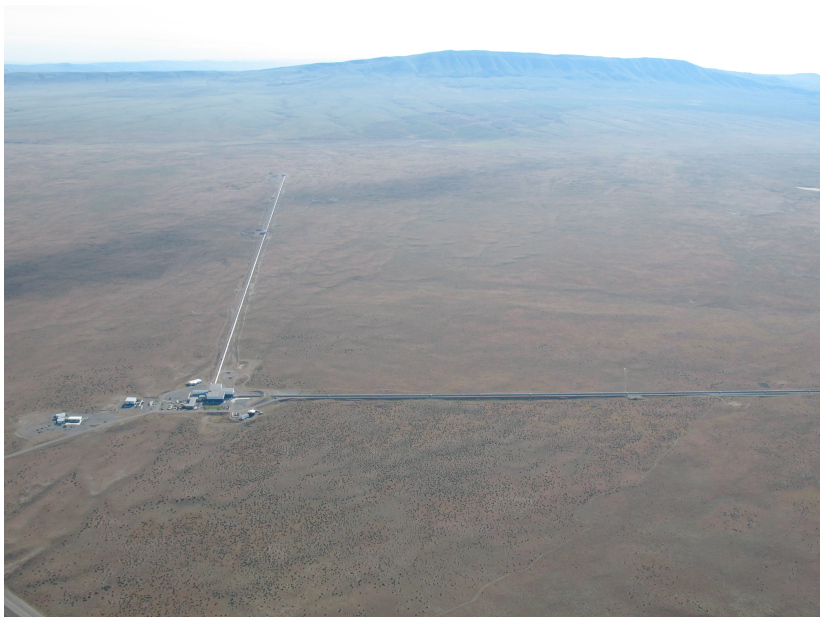
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LIGO Science Mission

LIGO, the Laser Interferometer Gravitational-wave Observatory, seeks to detect gravitational waves – ripples in the fabric of spacetime. First predicted by Einstein in his theory of general relativity, gravitational waves are produced by exotic events involving black holes, neutron stars and objects perhaps not yet discovered.

LIGO Hanford, WA



LIGO Livingston, LA



LIGO Laboratory =
LIGO Caltech + LIGO MIT +
LIGO Hanford Observatory +
LIGO Livingston Observatory

LIGO India!



Anticipated to be operational 2020

LIGO Scientific Collaboration

The LIGO Scientific Collaboration (LSC) is a self-governing collaboration seeking to detect gravitational waves, use them to explore the fundamental physics of gravity, and develop gravitational wave observations as a tool of astronomical discovery. The LIGO Scientific Collaboration was founded in 1997 and currently has just over 1000 members from 70 institutions worldwide.

LIGO LIGO Scientific Collaboration LSC



LIGO Identity and Access Management (IAM) Project

Knit together existing technologies and tools

Goals:

- ▶ Single identity for each LIGO person
- ▶ Single source of membership info
- ▶ Single credential for each LIGO person
- ▶ SSO across web, grid, command-line

LIGO electronic identity

Kerberos principal for each LIGO member

- ▶ `scott.koranda@LIGO.ORG`
- ▶ users call it their “at LIGO.ORG login”
- ▶ also known as their “albert.einstein” login
- ▶ roster drives creation of principal for each member
- ▶ roster pushes principal and details into LDAP

Single authoritative source of group membership

Decided to leverage Grouper from I2

- ▶ Flexible enough to reflect community structure
- ▶ Ready-to-use admin web front-end
- ▶ SOAP and RESTful WS APIs
- ▶ Privilege, Role, Attribute support
- ▶ Provision into LDAP



My tools

Explore

Search

Group workspace

Entity workspace

Help

LIGO

Roster

MyLIGO

EXPLORE

Members

Current location is:

Root: Communities: LVC: LSC: MOU: UWM: UWMGroupMembers

Membership list

- Show DIRECT members of this group
- Show INDIRECT members of this group
- Show ALL members of this group (direct and indirect)

Change display

10 Change page size

Showing 1-10 of 25 items

Click an entity name to view entity details, or click a membership description to view/modify privileges.

- Adam Mercer is a direct member
- Adam Miller is a direct member
- Alan Wiseman is a direct member
- Brian Moe is a direct member
- Bruce Allen is a direct member
- David Hammer is a direct member
- Eduardo Xavier Amador Ceron is a direct member
- Gregory Skelton is a direct member
- Jessica Clayton is a direct member
- Jollen Creighton is a direct member

[Next page](#)

LIGO group management based on
Grouper from



Single sign-on for LIGO web space



Deploy I2 Shibboleth System

- ▶ Single sign-on across LIGO web tools/pages
- ▶ LIGO Identity Provider (IdP)
 - ▶ Authenticate via `REMOTE_USER` and `mod_auth_kerb`
 - ▶ Attributes pulled from LDAP master server
 - ▶ Focus mainly on `IsMemberOf` (via Grouper)
- ▶ Consume federated identities
 - ▶ LIGO joined InCommon for many U.S. institutions
 - ▶ Support access for external collaborators

LIGO and InCommon: External Collaborators

The screenshot shows a web browser window with the URL <https://www.lsc-group.phys.uwm.edu/ligovirgo/cbcnote/DiscoveryService?entityID=https%3A%2F%2Fligo.c>. The browser's address bar and navigation buttons are visible at the top. Below the browser, a navigation menu contains links for [LVC Portal](#), [GEO](#), [LIGO](#), [LSC](#), [VIRGO](#), and [Help](#). The main content area features a search bar with 'Titles' and 'Text' options, and a link to [Refresh my LIGO group memberships](#). The primary heading is 'Choose how to login', followed by the instruction 'Use a suggested selection:'. Two logos are presented: the standard 'LIGO' logo and the 'LIGO Guest' logo. Below these, the text 'Or select your organization from the list below' is followed by a dropdown menu. The dropdown menu is open, showing a list of organizations: 'Massachusetts Institute of Technology' (selected), 'Please select your organization...', 'LIGO', 'LIGO Guest', 'Massachusetts Institute of Technology', and 'University of Wisconsin-Milwaukee'. To the right of the dropdown are 'Continue' and 'Help' buttons. On the right side of the page, there are two vertical panels. The first panel, titled 'Navigation', contains links for 'InspiralAnalysisGlossary', 'RecentChanges', 'FindPage', 'Help Contents', and 'DiscoveryService' (highlighted). The second panel, titled 'Page', contains links for 'Immutable Page', 'Info', 'Attachments', and a 'More Actions:' dropdown. A third panel, titled 'User', contains a 'Login' link. At the bottom of the page, there are links for 'Main/Main Powered', 'Python Powered', 'GPL licensed', and 'Valid HTML 4.01'. The browser's status bar at the bottom shows navigation icons and the page number '14 / 26'.

DiscoveryService - Compa x

<https://www.lsc-group.phys.uwm.edu/ligovirgo/cbcnote/DiscoveryService?entityID=https%3A%2F%2Fligo.c>



[LVC Portal](#) [GEO](#) [LIGO](#) [LSC](#) [VIRGO](#) [Help](#)

Search

[Refresh my LIGO group memberships](#)

Choose how to login

Use a suggested selection:

LIGO LIGO Guest

Or select your organization from the list below

Massachusetts Institute of Technology

Please select your organization...

LIGO

LIGO Guest

Massachusetts Institute of Technology

University of Wisconsin-Milwaukee

Navigation

- [InspiralAnalysisGlossary](#)
- [RecentChanges](#)
- [FindPage](#)
- [Help Contents](#)
- DiscoveryService**

Page

- Immutable Page**
- [Info](#)
- [Attachments](#)
- More Actions:

User

- [Login](#)

[Main/Main Powered](#)

[Python Powered](#)

[GPL licensed](#)

[Valid HTML 4.01](#)

CILogon integrates LIGO Data Grid

Get Your Certificate

https://test.cilogon.org

LIGO

Powered By
CILogon

Certificate Subject: /DC=org/DC=cilogon/C=US/O=LIGO/CN=Scott Koranda scott.koranda@ligo.org
Identity Provider: LIGO
Level of Assurance: Basic

Show Help

Password Protect Your New Certificate:

Enter A Password:

Confirm Password:

Get New Certificate

Log Off

For questions about this site, please see the [FAQs](#) or send email to help@cilogon.org.
Know **your responsibilities** for using the CILogon Service.

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Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the
National Science Foundation.

?

CILogon integrates LIGO Data Grid

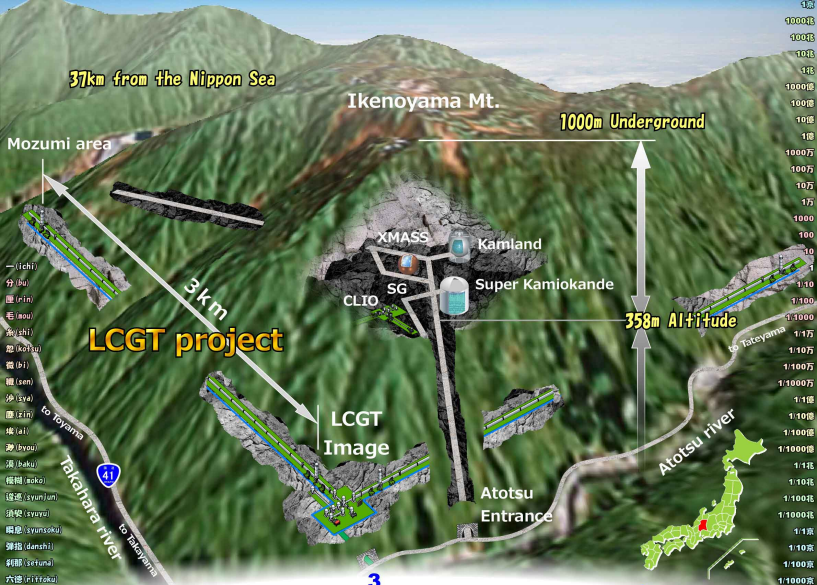
```
Terminal - skoranda@paprika: ~/Downloads
$ ligo-proxy-init scott.koranda
Enter host password for user 'scott.koranda':
Your identity: /DC=org/DC=cilogon/C=US/O=LIGO/CN=Scott Koranda scott.koranda@ligo.org
Creating proxy ..... Done
Your proxy is valid until: Thu Sep  6 11:48:12 2012
$
```


GW community is larger than LIGO...

Virgo interferometer, Cascina, Italy



KAGRA, Japan



Federated access for KAGRA

Date: Fri, 19 Oct 2012 05:15:41 -0500
From: Nelson Christensen <nchriste@carleton.edu>
Subject: access to remote participation wiki

Hi Scott, Warren, Stuart,

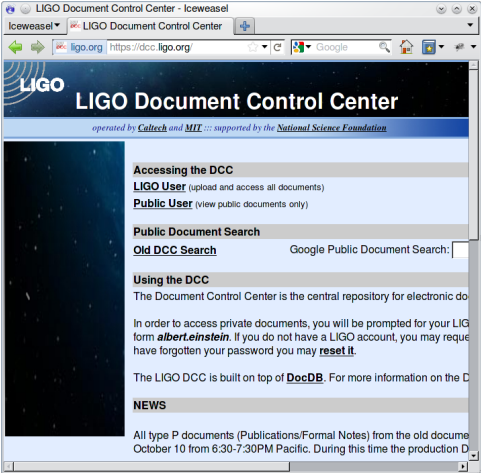
I am not sure if you are the right guys for this,
but I will start with you.

Is there any way that we can give access to the
remote participation wiki to our KAGRA colleague
Yoichi Aso who is the new KAGRA member on our
remote participation committee.

Thanks,
Nelson

Federated access for KAGRA

Need to share technical drawings and like with about 50 KAGRA scientists



Peer-to-peer federation necessary

InCommon membership enables only US federation

- ▶ Ongoing negotiation with UK Access Federation
- ▶ Early work with eduGAIN in Europe
- ▶ Other?

LIGO also expects relying parties in Candada, Australia, India, Korea, China, ...

No option now but peer-to-peer negotiation or joining each national identity federation.

IDEM in Italy will be next federation for LIGO

LIGO CTSC international federation engagement (6 mo)

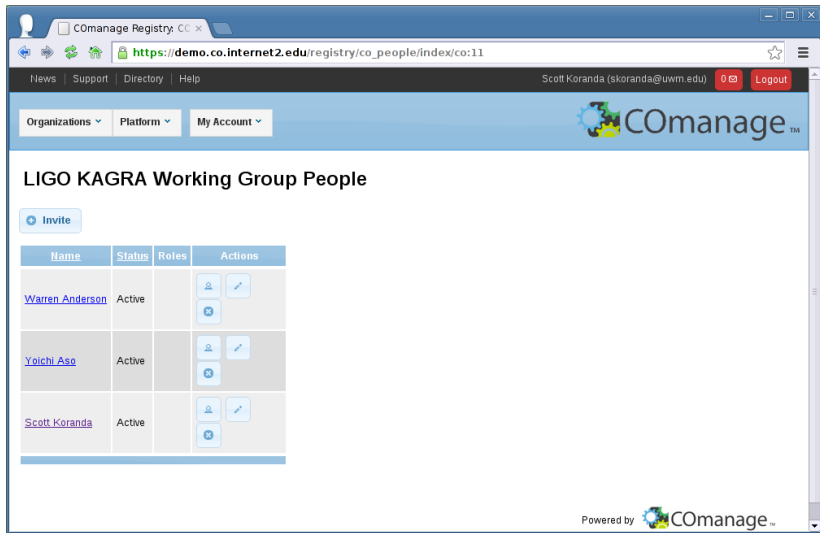
Goals

1. Document technical and policy changes for a peer-to-peer
2. LIGO membership in IDEM
3. Prototype interoperability with UK via InCommon
4. Research likelihood and timeline for eduGain via InCommon
5. Assist LIGO-India with developing use cases

Peer-to-peer federation with KAGRA

- ▶ IdP managed by University of Tokyo
- ▶ Metadata exchange was easy
- ▶ Negotiation on attributes was easy
 - ▶ ePPN, givenName, sn, email
 - ▶ Anticipate difficulty with eduGAIN
- ▶ Access control is largest issue
 - ▶ No LIGO/KAGRA working group
 - ▶ ACL based on ePPN
 - ▶ Only admins know ePPN
 - ▶ Grouper can consume federated identity, but no sophisticated onboarding/offboarding or enrollment, notification

Managing Collaboration with COmanage



COmanage Registry: CC x

https://demo.co.internet2.edu/registry/co_people/index/co:11

News | Support | Directory | Help










Scott Koranda (skoranda@uwm.edu) 0 Logout

Organizations Platform My Account

COmanage™

LIGO KAGRA Working Group People

Invite

Name	Status	Roles	Actions
Warren Anderson	Active		  
Yoichi Aso	Active		  
Scott Koranda	Active		  

Powered by **COmanage™**

Final thoughts...

There is no distinction between web and grid

- ▶ Scientists just want to use tools
- ▶ Don't care if "web" or "grid"
- ▶ Typical use case:
 - ▶ Submit large workflow to grid
 - ▶ Jobs run for week analyzing data
 - ▶ Workflow generates 1000's of summary images
 - ▶ Need to POST summary into analysis wiki
- ▶ Seamless cred management across grid, web, cloud
- ▶ Delegation is important
- ▶ Need Higher Ed and Grid communities to build together