

Supporting Collaboration for the Gravitational Wave Astronomy Community with InCommon

Scott Koranda for LIGO

LIGO and University of Wisconsin-Milwaukee

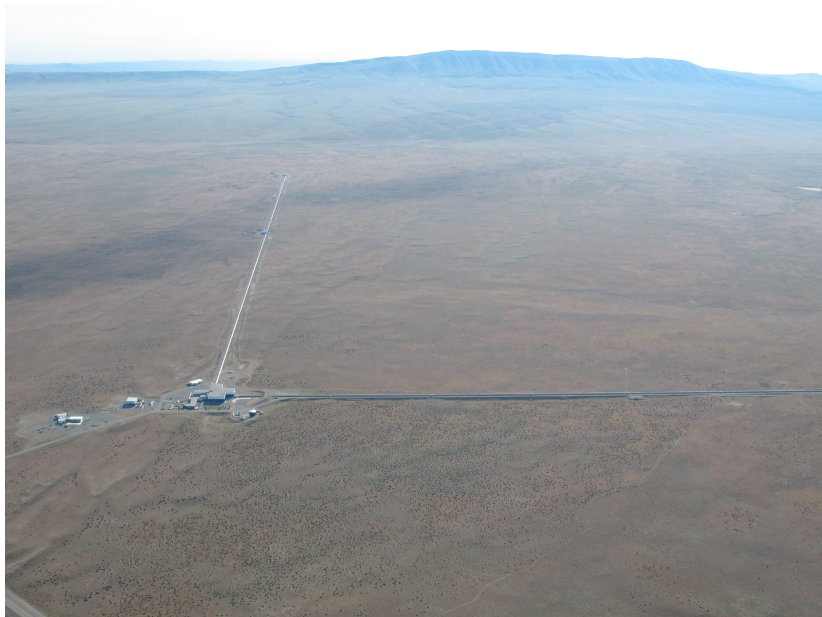
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LIGO Science Mission

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

Largest single project funded by NSF

LIGO Laboratory is Caltech, MIT, and 2 interferometer sites

LIGO Scientific Collaboration is larger collaboration working to realize science potential of the LIGO instruments

LIGO Scientific Collaboration \sim 1,000 members world wide

Broader Gravitational Wave Community

Gravitational Wave community is larger than
LIGO...

Virgo interferometer, Cascina, Italy



Gravitational Wave Astronomy (GWA)

Once initial detection(s) have been made the community will quickly turn to the real science goal—using gravitational wave data to open a new window on the universe and create the new discipline of Gravitational Wave Astronomy (GWA).

Multi-messenger Astronomy (MMA)

Multi-messenger astronomy (MMA) combines data from electromagnetic instruments and telescopes (radio, gamma-ray, x-ray, optical) and other instruments (eg. neutrino detectors) with gravitational wave data.

A MMA approach is an important step during initial detection era when the community learns how to interpret data and “dig out” the physics.

LIGO, Virgo, & Electromagnetic Follow-Up Project

The LIGO, Virgo, & Electromagnetic Follow-Up Project (LV-EM) includes joint data analysis between LIGO and Virgo with candidate gravitational wave events or triggers published to partners operating electromagnetic instruments so they can point telescopes and do followup observing.

LIGO, Virgo, Electromagnetic Follow-Up

LV-EM is happening **now**.

LIGO and Virgo have signed 60+ MOUs with electromagnetic partners.

Roughly 1000 researchers covered by these MOUs, spanning the globe.

LV-EM: Identity Management Needs

- ▶ Support a Collaboration Wiki.
- ▶ Support a Collaboration Email List Server.
- ▶ Manage controlled access to Gravitational wave candidate event database (GraCEDb).

LIGO and University of Wisconsin-Milwaukee Investments

LIGO deployed SAML SSO infrastructure with Shibboleth IdP and 80+ Shibboleth SPs.

LIGO joined InCommon and has taken an active role helping to bring SP and Science VO perspective.

University of Wisconsin-Milwaukee (UWM) is InCommon Participant and contributing to community.

Jointly with Internet2 (funding by NSF) LIGO developed COmanage for managing collaborative organizations.

LIGO and University of Wisconsin-Milwaukee Investments

UWM deployed 3 SPs under the gw-astronomy.org domain

- ▶ Registry (COmanage)
- ▶ Wiki (Foswiki)
- ▶ Email list server (Sympa)

gw-astronomy.org is a neutral domain to support collaboration across multiple GW interferometer and astronomy projects.

gw-astronomy.org Registry

The screenshot shows a web browser window with the URL `https://gw-astronomy.org/registry/co_people/edit/116/co.5`. The page title is "Edit Warren Anderson". The browser's address bar shows the URL and a search icon. The page header includes "LV-EM People | LV-EM Petitions", "Platform", "Scott Koranda (scott.koranda@ligo.org)", and a "Logout" button. The main content area is titled "Edit Warren Anderson" and contains several sections:

- Name:** A text input field containing "Warren Anderson(Primary, Official)" with an "Add" button.
- Identifiers:** Two text input fields. The first contains "EMF20029(employeeNumber)" and the second contains "WarrenAnderson2(wikiname)". Each has an "Add" button.
- Email:** A text input field containing "warren.anderson@ligo.org(Official, Unverified)" with an "Add" button.
- Groups:** A section with a "Manage Group Memberships" button and three text input fields containing "gw-astronomy:LV-EM", "gw-astronomy:LV-EM:list", and "gw-astronomy:LV-EM:wiki". Each has an "Add" button.

The right sidebar contains a list of navigation options:

- NSF Demographic Record
- Autogenerate Identifiers
- Provisioned Services
- Expunge
- View History
- View
- CO People Search

LV EM Follow-Up: IdM Needs

Fundamental need is to get scientists covered by the MOUs to the SPs.

Given the LIGO and UWM investments, using federated identity and InCommon is the desired approach.

When it works it works quite well.

Let's talk about when it does not work...

No Attributes from InCommon IdPs

Need a persistent (possibly opaque) identifier that is the same for all SPs (non-targeted) so we know which scientist is accessing the services.

InCommon Research and Scholarship (R&S) is designed solution.

But only 94 InCommon R&S IdPs

- ▶ No Berkely
- ▶ No Harvard
- ▶ No PSU
- ▶ No Stanford
- ▶ No University of Texas at Austin

No Attributes from InCommon IdPs

Is this an InCommon Culture Issue? (Honest question)

*IdPs are for federating with SPs run by campus or vendor
SPs we sign contracts with.*

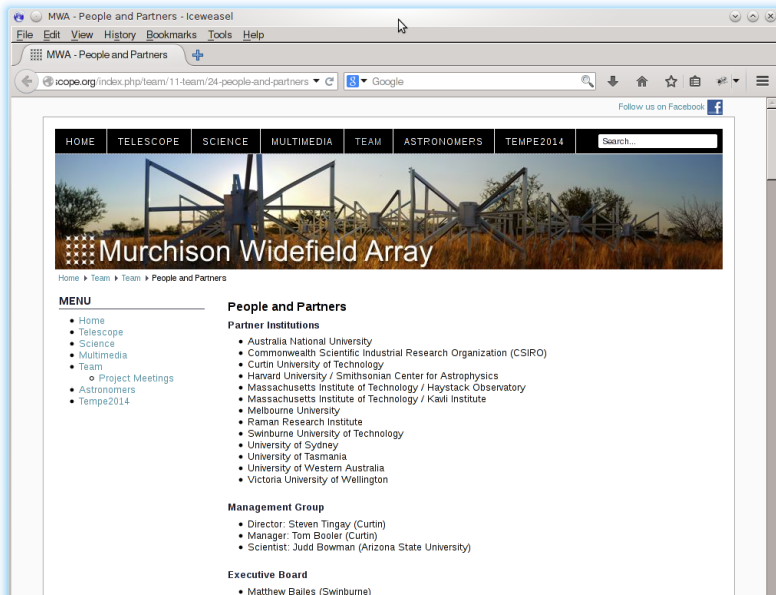
*Just come talk to us directly and we will be happy to
support your SPs.*

*We need to know the names of the researchers and they
need to start the conversation.*

Is it really concerns about privacy or is that masking a lack of
vision to support research?

The Scaling Question

One of MOU signers is Murchison Widefield Array (MWA):



The screenshot shows a web browser window displaying the Murchison Widefield Array (MWA) website. The browser's address bar shows the URL `scope.org/index.php/team/11-team/24-people-and-partners`. The website features a navigation menu with links for HOME, TELESCOPE, SCIENCE, MULTIMEDIA, TEAM, ASTRONOMERS, and TEMPE2014. A search bar is located on the right side of the navigation menu. Below the navigation menu is a large banner image of the Murchison Widefield Array telescope structure in a field, with the text "Murchison Widefield Array" overlaid. Below the banner is a breadcrumb trail: `Home > Team > Team > People and Partners`. The main content area is titled "People and Partners" and contains three sections: "Partner Institutions", "Management Group", and "Executive Board".

HOME | **TELESCOPE** | **SCIENCE** | **MULTIMEDIA** | **TEAM** | **ASTRONOMERS** | **TEMPE2014** | Search...

Murchison Widefield Array

Home > Team > Team > People and Partners

MENU

- Home
- Telescope
- Science
- Multimedia
- Team
 - Project Meetings
- Astronomers
- Tempe2014

People and Partners

Partner Institutions

- Australia National University
- Commonwealth Scientific Industrial Research Organization (CSIRO)
- Curtin University of Technology
- Harvard University / Smithsonian Center for Astrophysics
- Massachusetts Institute of Technology / Haystack Observatory
- Massachusetts Institute of Technology / Kauli Institute
- Melbourne University
- Raman Research Institute
- Swinburne University of Technology
- University of Sydney
- University of Tasmania
- University of Western Australia
- Victoria University of Wellington

Management Group

- Director: Steven Tingay (Curtin)
- Manager: Tom Booler (Curtin)
- Scientist: Judd Bowman (Arizona State University)

Executive Board

- Matthew Bailes (Swinburne)

The Scaling Question

I do not (and cannot) know the names of individual scientists at each institution.

Not scalable for me to track them down, explain federated IdM, and plead for them to send a letter to their campus CIO.

Not scalable for me to go back to “special IdPs” each time we add an SP to the mix.

Ask 1

LIGO asks for a sustained campaign by InCommon at the highest levels to change the culture of the participant community so that operating an IdP and supporting research (releasing attributes ala R&S) is the default.

International Users

More than half of the institutions identified by MOU signers are outside of US.

Spectrum is far too broad to attempt bi-lateral agreements or for LIGO/UWM to join each individual federation.

eduGAIN is the only practical path at this point.

Ask 2

LIGO asks InCommon to inject gw-astronomy.org SPs into the eduGAIN metadata tagged as REFEDs R&S. (any moment now!)

LIGO asks InCommon to provide a metadata feed for InCommon members that want to federate with eduGAIN IdPs.

Resources for InCommon Ops to operate eduGAIN services at the standard InCommon service level.

Users with No IdP

Users lost to EM-LV right now:

- ▶ US InCommon institution but not R&S
- ▶ Not US InCommon institution
- ▶ International user but not eduGAIN and REFEDs R&S

Right now LIGO operates a SAML2 IdP of last resort

- ▶ `scott.koranda@guest.ligo.org`
- ▶ Expensive and not really a good solution
- ▶ LIGO would be happy to give that up

Social identity is a possible solution (for now)

- ▶ UWM/LIGO about to sign contract with Cirrus
- ▶ A stable UnitedID.org would be fine

Absolutely need IdP of last resort

Ask 3

LIGO asks InCommon to clarify the picture on InCommon providing a stable IdP of last resort to support research: Who, How, and When decisions will be made.

Understood that answer might be “no”, but LIGO would like to know why and understand the process.

What I Have Not Asked For...

LOA (Assurance) is a distraction at this point.

First need to understand if higher ed federated identity is going to work (ie. will we get attributes) or should we just go all in with social.

Trustmarks, IMHO, just more things IdPs will not do.

No hosted services (outside of IdP of last resort)-LIGO fortunate at this point it has people and hardware to do this ourselves.

Thank You

Thank you for your time and the opportunity to present the current needs of the Gravitational Wave Astronomy community.