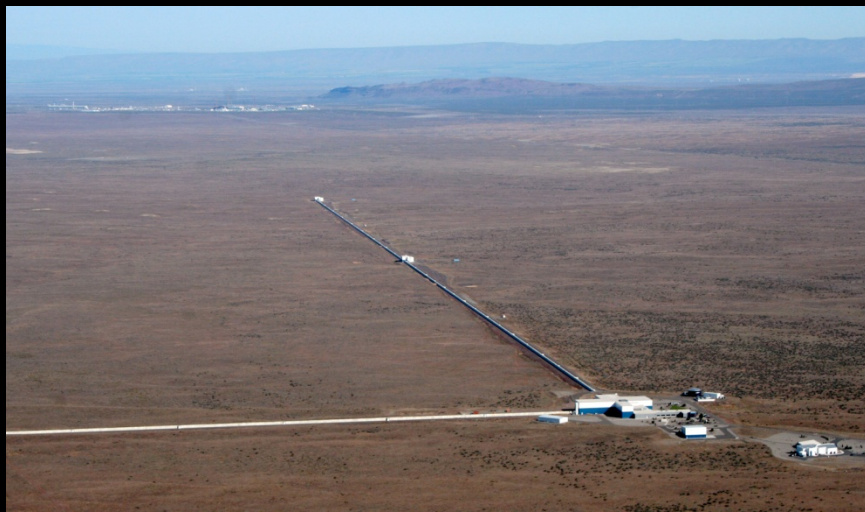




Providing remote access to the LIGO interferometers with EPICS based tools

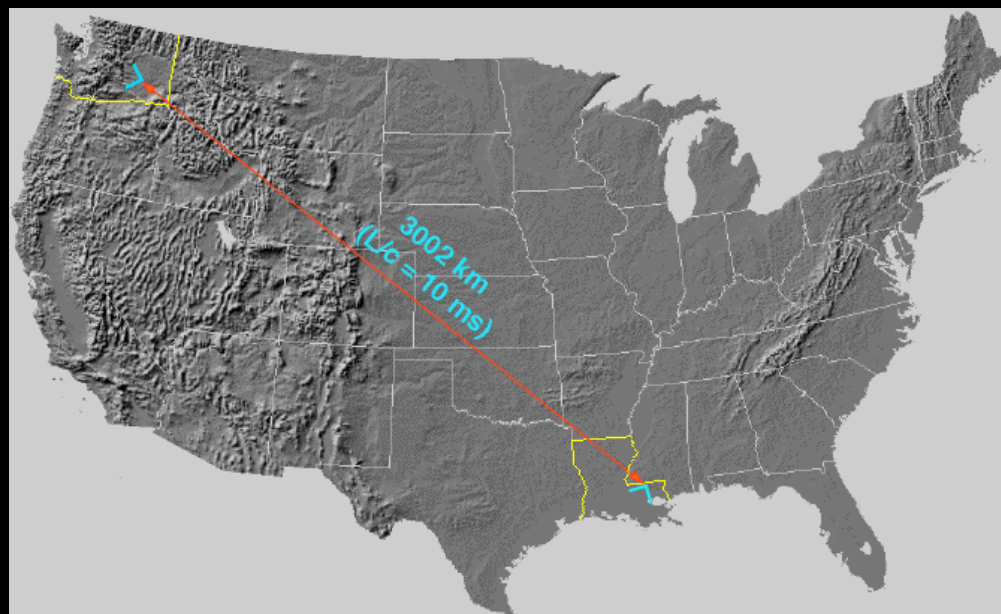


*Jonathan Hanks
Keith Thorne
LIGO Laboratory*



LIGO

- Two facilities roughly 3000km apart
- Working with a international collaboration of +1k researchers
- Coming back online this year after a multi year upgrade



LIGO G1500628-v1



EPICS in LIGO

- EPICS CA is our control system.
 - » Each instrument has roughly 250k PVs
 - » Using EPICS 3.14.12.x
 - » Long term data archival is in gravitational wave frame files. Only a subset of the PVs are stored here.
- Various IOCs
 - » Main control systems run soft IOCs at 8Hz
 - » Automation scripting - Python based IOCs using CAS
 - » Interface to Beckhoff controls - custom TwinCAT IOCs
 - » Vacuum controls - Legacy VME VxWorks 3.9 (being replaced)



EPICS in LIGO

Currently deployed toolset

- MEDM
- StripTool
- BURT
- Probe

Tools we are evaluating

- AlarmHandler replacement (BEAST)
- MEDM replacements (CaQtDM, CSS, ...)



EPICS and MEDM in LIGO

We use a slightly customized EPICS Base (Sequencer)

- Long channel names (60 characters)

BURT modifications

- Extend wait time based on # of PVs

We use a customized version of MEDM

- Option to read macros from file
- Capability to all input files from a webserver



Remote Access to LIGO

Supporting our control rooms has been easy.

Supporting our remote collaboration takes more work.
And has led to two developments:

- Making the control screens accessible (read-only)
 - » It was much easier to add HTTP support to MEDM than to redo and revalidate the screen files.
- Packaging the software
 - » Need to get the software to the users
 - Built up a MacPorts version of EPICS and the basic tools we use
 - Working on .deb and .rpm versions as well



MacPorts and EPICS

We are using a local repository as this is very LIGO specific.

Tried several approaches to fitting the EPICS build system in a 'regular' file hierarchy.

Eventually settled on a simple packaging that still allows a modular setup



Whats Next?

We are starting a data taking run this year.

In the short term, no new tools.

In the long term, we need to update our toolset to stay current and continue to simplify the rollout of our selected tools to the end users (control room and remote collaborators).