

INTRODUCTION TO THE IQ-WALL

SCHOLARS' COMMONS WORKSHOP

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PTI/UITs Advanced Visualization Lab



**RESEARCH
TECHNOLOGIES**

INDIANA UNIVERSITY

University Information Technology Services



**PERVASIVE TECHNOLOGY
INSTITUTE**

INDIANA UNIVERSITY

OUTLINE

- AVL Introduction
- IQ-Wall Introduction
- Sample IQ-Wall uses
- How to use the IQ-Wall
- Experiment: Hands-on with SAGE2
- How to learn more

ADVANCED VISUALIZATION LAB

- A unit of the Research Technologies division of UITS
- Research Technologies is a PTI Cyberinfrastructure and Service Center
- "... to promote the innovative application of visual technologies to advance Indiana University's missions in research, education, creative activity, and community outreach"

IQ-WALL

- Part of AVL's distributed visualization initiative
- IQ = Inexpensive, Interactive, Immersive, Interface
- Commercial-off-the-shelf components
- Relatively easy to build, install, and configure
- Simple operation with a single Windows PC

WHERE ARE THEY?



Cyberinfrastructure Building IQ-Wall

- Cyberinfrastructure Building (24 tiles, 6x4)
- IUB Network Operations Center, CIB (12 tiles, 6x2)
- Mathers Museum (12 tiles, 3x4)
- Informatics (9 tiles, 3x3)
- ICTC at IUPUI (8 tiles, 4x2)
- Social Science Research Center, Woodburn Hall (4 tiles, 2x2)
- And now, Scholars' Commons, Wells Library (16 tiles, 4x4)

WHY USE THE IQ-WALL?

- **Size:** show something to multiple people
 - 13.5 feet wide
- **Resolution:** show something very detailed
 - 5464 pixels by 3072 pixels, nearly 17 Megapixels
- **Screen space:** show many things at once
- **Collaboration:** multiple people show things at once
- **3D:** 3D rendering and stereoscopic presentation
- **Performance:** take advantage of the main PC's specs
 - 128 GB RAM
 - Dual 8-core Xeon processors

SIZE EXAMPLES

PRESENTATIONS



Cyberinfrastructure Building IQ-Wall

SCORE ANALYSIS

The screenshot displays a music score analysis application. On the left, a sidebar shows a list of 12 tracks, each with a thumbnail image and a title. The first track, 'Luna Waltz (Frau Luna)', is selected. The main area on the right shows the detailed musical score for this track. The score is written for piano (p) and includes a crescendo (cresc.) marking. The tempo is marked 'Tempo di Gavotte'. The score is in 3/4 time and features a melody in the right hand and a bass line in the left hand. The score is presented in a clean, professional layout with clear notation and dynamic markings.

Luna Waltz (Frau Luna)

The Glow Worm (Idyl) (Glühwürmchen)
Tempo di Gavotte

Unrequited Love (Verschmähte Liebe) Waltz
Amoroso

Berlin Echoes March (Berliner Luft)
Trio

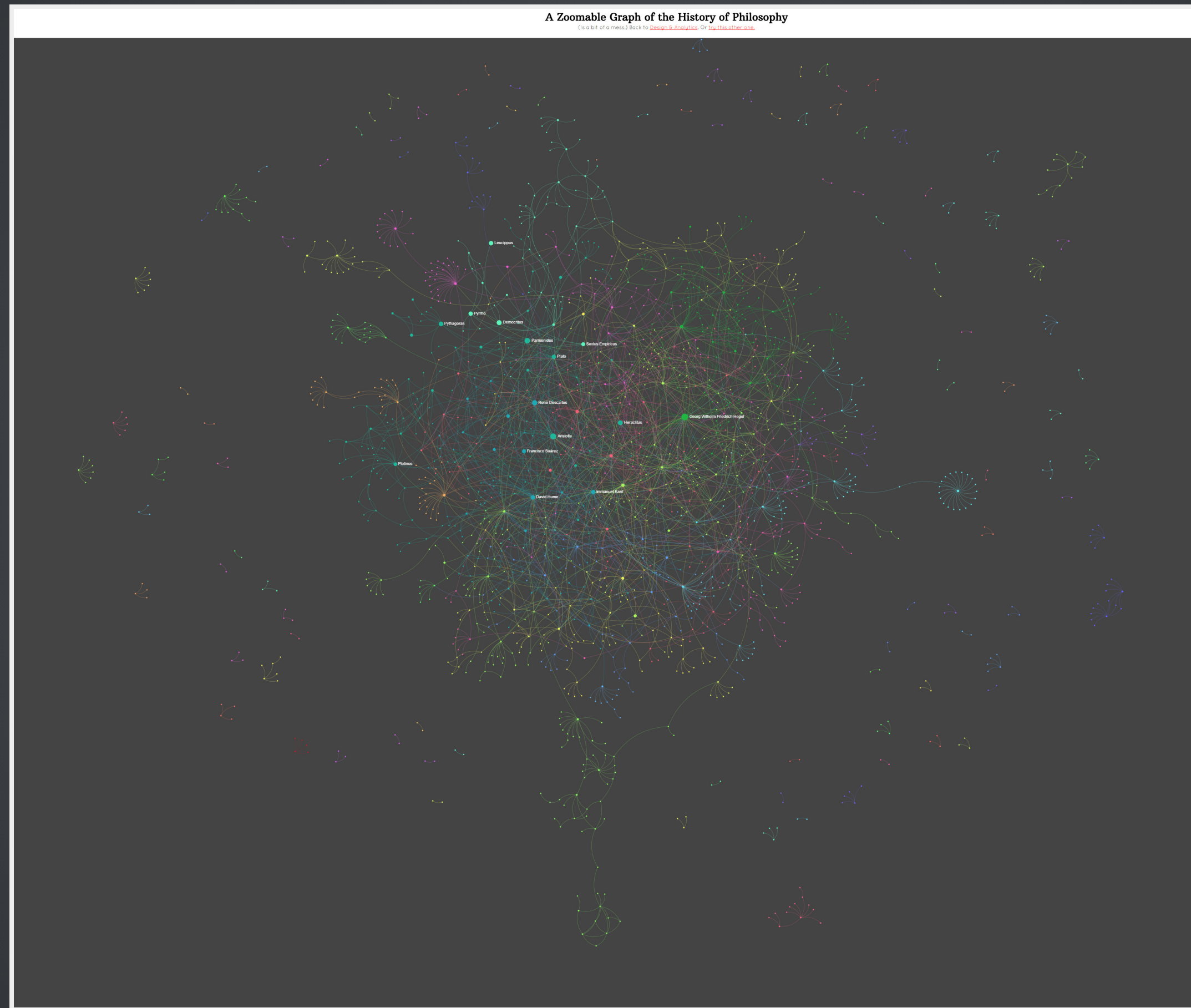
Siamese Patrol (Siamesische Wachtparade)

Police Parade March (Schutzmanns Marsch)
Trio

Spring, Beautiful Spring Waltz (Frühling, wie bist du so schön)
p dolce

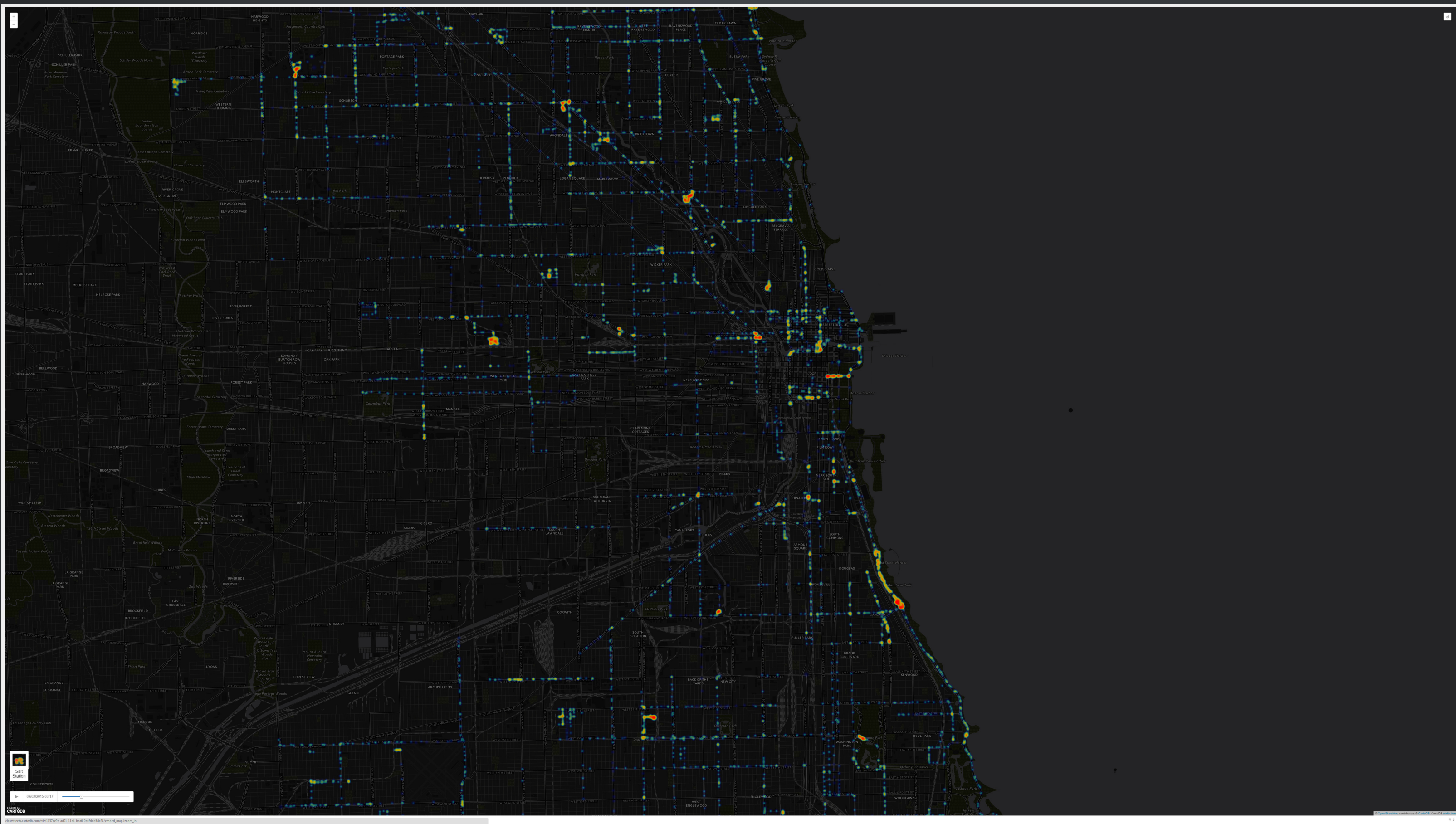
RESOLUTION EXAMPLES

NETWORKS



Source

MAPS



Source

PANORAMAS

[illegible]

Source: Google Art Project

HIGH-RESOLUTION VIDEO

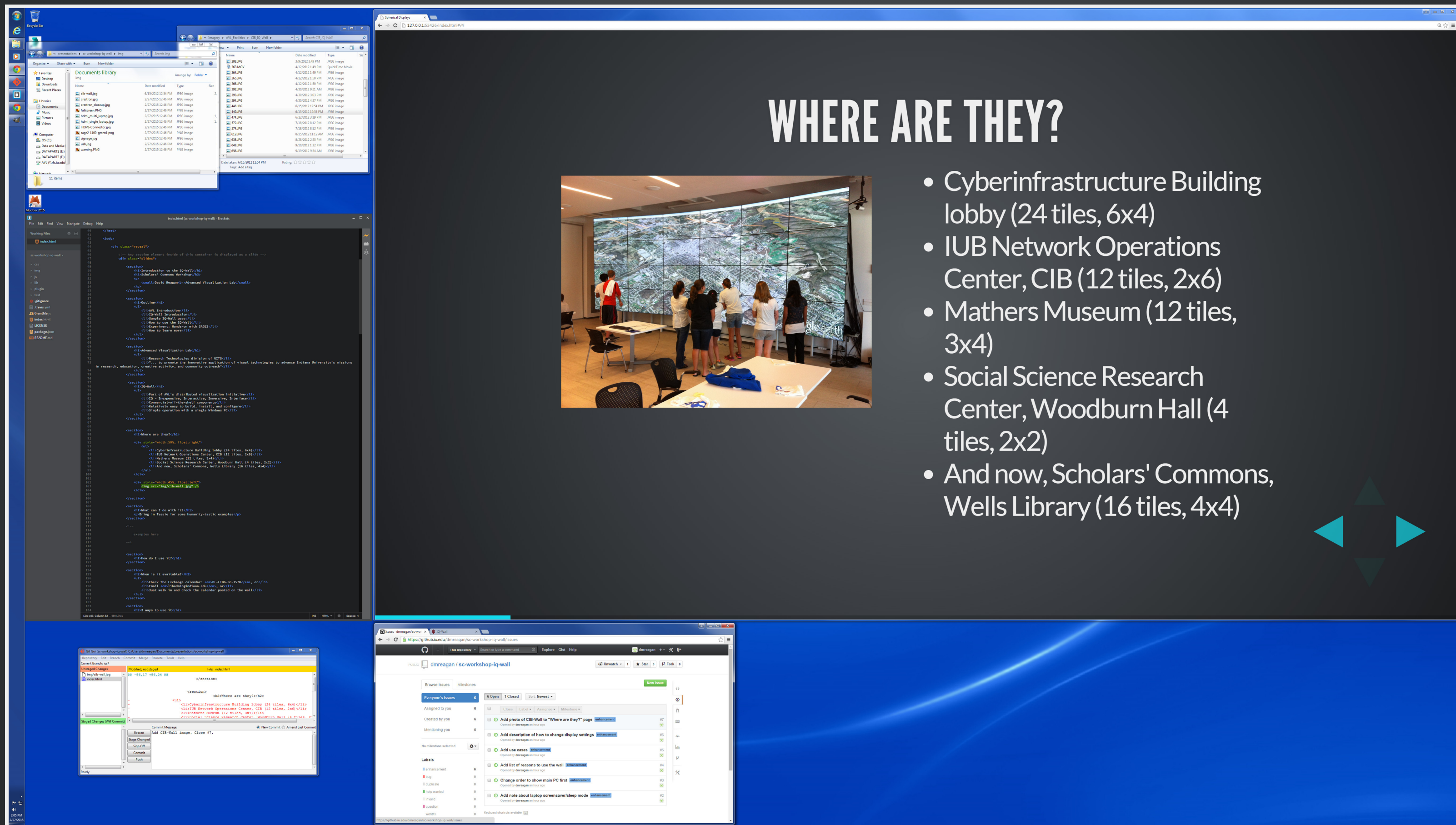
[Source](#)

SCREEN SPACE EXAMPLES

EDITING DOCUMENTS

WHERE ARE THEY?

- Cyberinfrastructure Building lobby (24 tiles, 6x4)
- IUB Network Operations Center, CIB (12 tiles, 2x6)
- Mathers Museum (12 tiles, 3x4)
- Social Science Research Center, Woodburn Hall (4 tiles, 2x2)
- And now, Scholars' Commons, Wells Library (16 tiles, 4x4)



DOCUMENT COMPARISON

A most excellent and vertuous Ballad of the Patient Griffell.

To the tune of The Brides good morrow.



A Noble Parquette,
As he did rise a hunting
hard by a forest side,
A faire and comely spawden,
As the did sit a spinning,
his gentle eye espyde:
Soft faire and lowly,
And of comely grace was she,
although in simple attire;
she sang full sweetly,
With pleasant voyce melodiously,
which set the Lays heart on fire:
The more he lookt, the more he might,
Beauty by his hearts delight,
And to this damzell
then he went.
God speed (quoth he) thou famous
faire spawden of this homely bolwer,
where lone and vertue
dwels with sweet content.
With comely gesture,
And modest mild behaviour,
she had him welcome then,
she entertain'd him
In faithfull friendly manner,
and all his Gentlemen.
The Noble Parquette
In's heart felt such a flame,
which set his senses at strife,
that he, faire spawden,
saw her some what in the name,
as if he were the same,
Griffell is my name quoth she,
faire but for your degree,
silly spawden,
and of Parents poise.
Say, Griffell, thou art rich, he said,
A vertuous, faire, and comely spawden,
Gent me the love,
and I will aske no more.

At length she contented,
And being both contented,
they married were with speed:
her Country house
was chang'd to withe and welvet,
as to her state agreed:
And when that the
was trimly fixt in the same,
faire staining every
other faire and princely Dame
that did appeare in her light.
Many enimies her therofore,
Because she was of Parents poise,
And I will her Lays and the
great strife did raise:
Some said this, and some said that,
Which did their father well content,
And to her Lays
they would her oft dispute.
The Noble Parquette,
Doubt they, why dost thou young be,
thus lately for to wed,
What might have gotten
An honorable Lays
into your Princely bed:
Who will not now
Your Noble Lays will deride,
which shall hereafter be borne,
What are of blood to hale,
Worne by the spawdens doe,
the which will bring them in feyne.
But her therofore quite away,
And take to you a Lays gay,
whereby your Lays
may renowned be.
Thus every day they seem'd to prate,
That malice of Griffells good estate,
Who all this while
took it most patiently.

When that the Parquette
Did see that they were bent thus
against his faithfull wife,
Whom he most dearly
belov'd as his life,
belov'd as his life,
joy to pene her patient heart
thereby her foes to disgrace,
Thinking to dish her
A hard discontentous part,
that men might pity her case:
Great with child this Lays was,
And at last it came to passe,
Two noble children
at one birth the had,
A son and daughter God had sent,
Which did their father well content,
And which did make
Great royall feeding
Was at this Childrens Christning,
and Princely triumph made,
All Nobles that came thither
were entertain'd and feild,
And when all these pleasant
spawdens quite were done,
the Parquette a messenger sent
for his young daughter,
And his pretty smiling son,
declaring his full intent,
How that the Nobles most marryd be,
Joy to the Parquette did decree:
Come, let me have
the Children then he said,
Which that faire Griffell wept full sore,
she saying her hands e said no more,
My gracious Lays
must have his will obeyd.



The second part To the same tune.

He took the Nobles,
When from the nursing Lays,
betweene her tender armes,
she often with
With many forsoothfull kisses,
that the might ease their harmes:
farewell, farewell
A thousand times my children deare,
never shall I see you againe;
This long of me
Your sad and wooll mother here,
for whole sake both must be blame;
Had I bene borne of royall race,
You might have bene in happy case,
But you must be
for my unhappiness.
Come messenger of death (quoth she)
Take my dearest Nobles to thee,
And to their father
my complaints expresse.
He took the Children,
And to his Noble spawden
he brought them both with speed,
Which in secret sent them
into a Noble Lays
to be brought up indeed.
When to faire Griffell
With a heavy heart he goes
where the fate mildly all alone,
A pleasant gesture,
And a lowly looke the thewes,
as if no griefe the had knowne.
(And he) my children now are blame,
What thinks faire Griffell of the same,
God send long life
unto my Lays (quoth she)
With you, my Lays are pleas'd with it,
Let no offence be found in this.
To give me Lays a parting kisse,
With watery eyes,
farewell my deare, he said.

London Printed for Iohn Wright,

FINIS.

201 A most excellent and vertuous Ballad of the patient Griffell:
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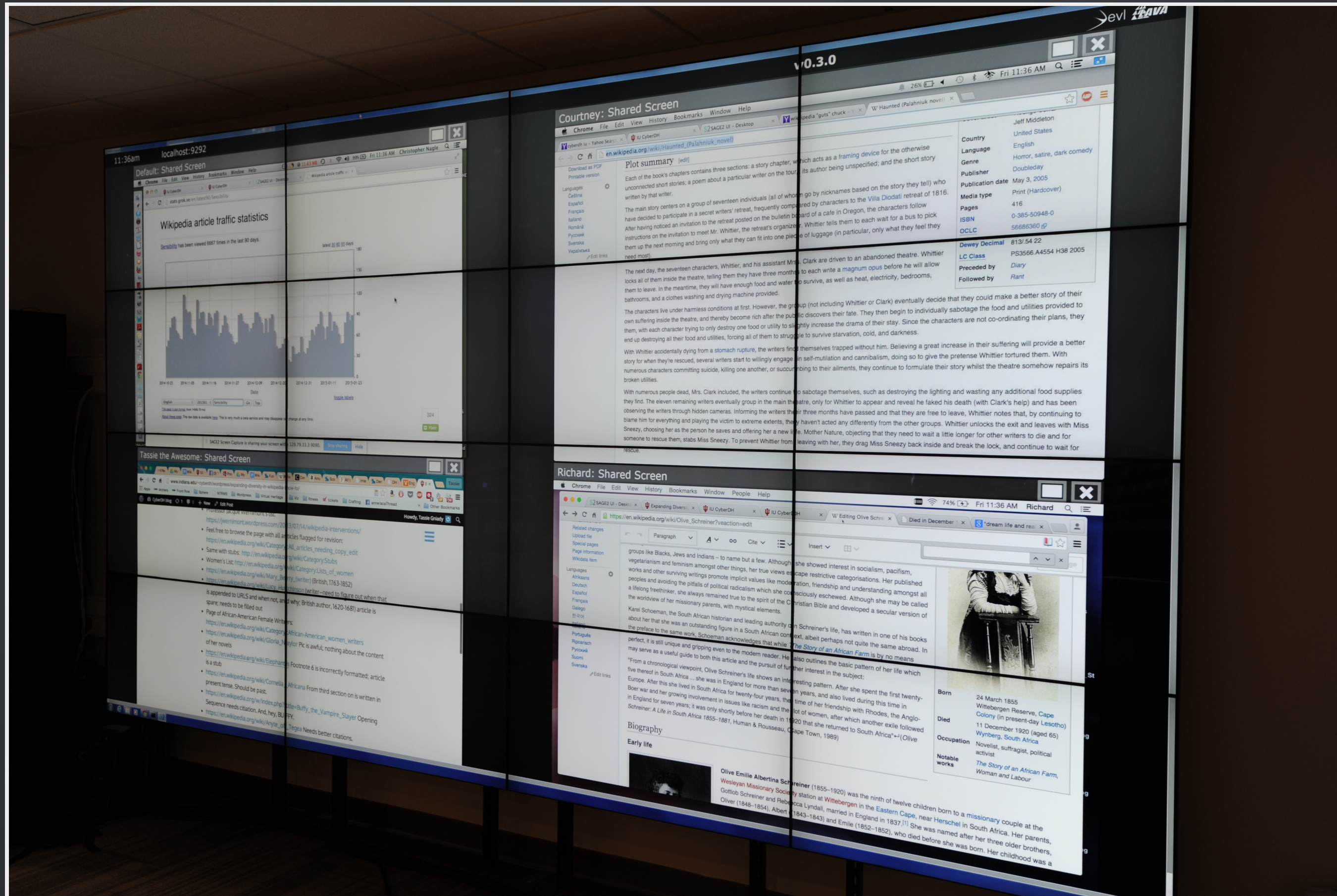
From Princely Palace,
Unto her fathers Cottage,
poore Griffell now is gone:
full of care and woe
she lived there contented,
no tizing she thought upon:
And at that time though
All the Land the speeches went,
the Parquette should marryd be
Unto a Noble Lady great,
of high descent,
and to the same all parties did agree;
The Parquette sent for Griffell's sake,
The Nobles bed-chamber to prepare,
That nothing therein
might be found amys: (come,
The Nobles was with her brother
which was great joy to all and some,
But Griffell took
all this most patiently.

At length she contented,
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Printed at London for H. Giffell.

COLLABORATION EXAMPLES

HACKATHONS



3D EXAMPLES

MODEL VIEWING

Indiana University: Rose Well House by Matthew Brennan on Sketchfab

STEREOSCOPIC WALKTHROUGHS



STEREOSCOPIC VIDEO

HOW DO I USE IT?

WHEN IS IT AVAILABLE?

- Check the Exchange calendar: *BL-LIBG-SC-157H*, or
- Email *libadmin@indiana.edu*, or
- Just walk in and check the calendar posted on the wall

3 WAYS TO USE IT

- Main PC, full wall at native resolution
- Single device, scaled across entire wall
- Up to 4 devices, each device scaled across one quadrant

WHY USE THE MAIN PC?

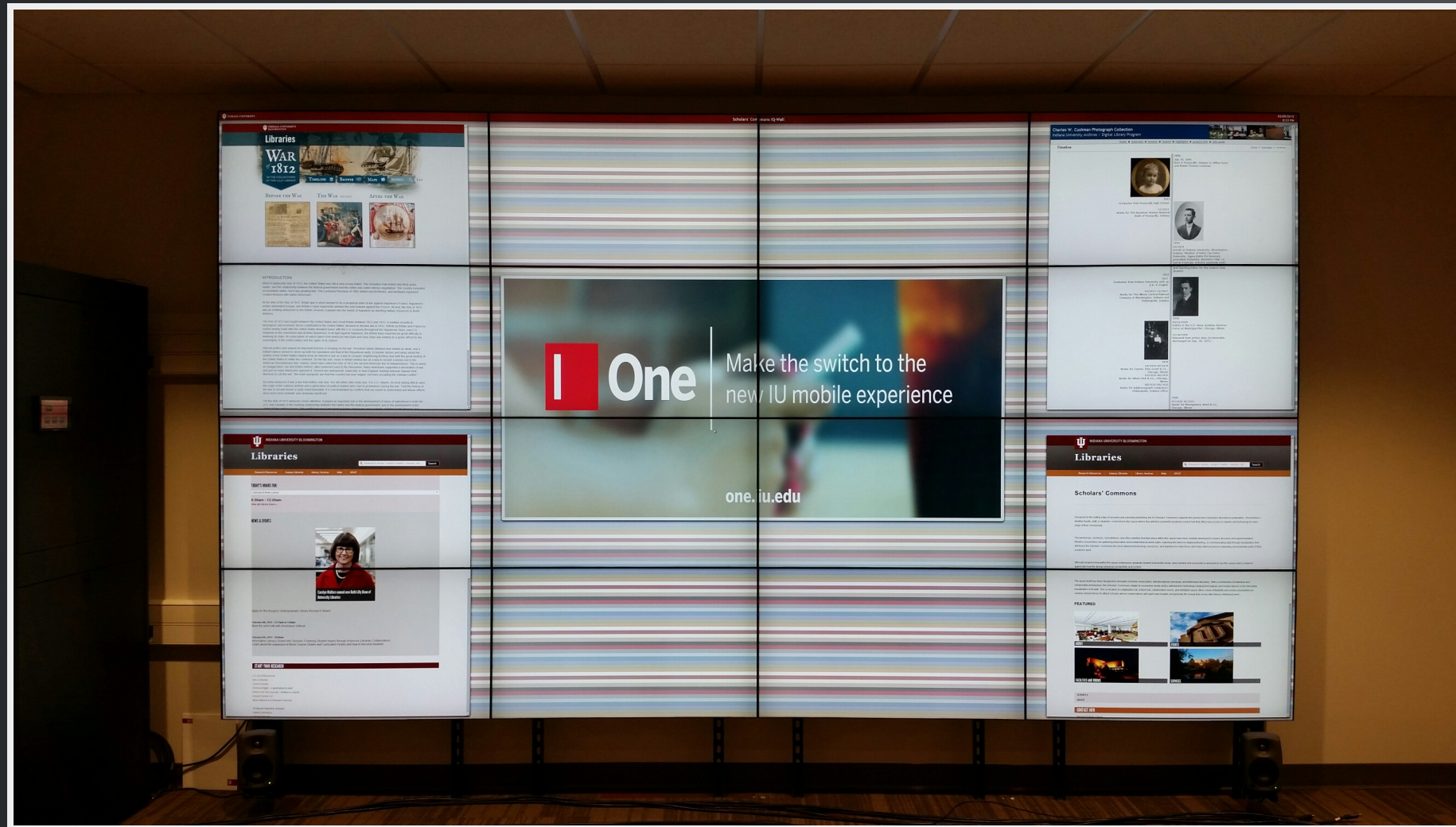
- Only way to use full wall resolution
- Likely more powerful than your laptop
- Accessible to all IU students, staff, faculty

WHY USE YOUR OWN DEVICE(S)?

- You don't need the full resolution nor power of the main PC
- You need applications that aren't or can't be installed on the main PC
- You don't want to use Windows
- You want a second display or confidence monitor
- You want to display more than one device at a time

HOW TO USE THE MAIN PC

HOW TO LOG IN?



1. Locate keyboard and mouse near the rack
2. If signage is running, press Ctrl+Alt+Del to show login screen
3. Enter IU username and passphrase
 - Tip: may be necessary to enter *ADS\username*




WHY IS THE TEXT SO SMALL?

It's not really, the resolution is just really high.


HOW TO DEAL WITH SMALL TEXT

- In web browsers, use Ctrl - + to zoom (Ctrl - 0 to reset)
- For all of Windows, set UI size (watch for strange UI behavior in some applications)
 1. Click the Start button on the task bar
 2. Type "display" and select *Display* under *Control Panel*
 3. Set to 125% or 150%
 4. Must log out and back in for changes to show
- Drag Windows taskbar from bottom to left side
 - If taskbar won't move, right-click and deselect *Lock the taskbar*

Programs (3)




-  ImageMagick Display
-  ImageMagick Display
-  Solstice Display

Control Panel (42)



 Display

Display
Change your display settings and make it easier to read what's on your screen.

Documents (34)

-  display_size.jpg
-  index.html
-  Displays

Files (967)

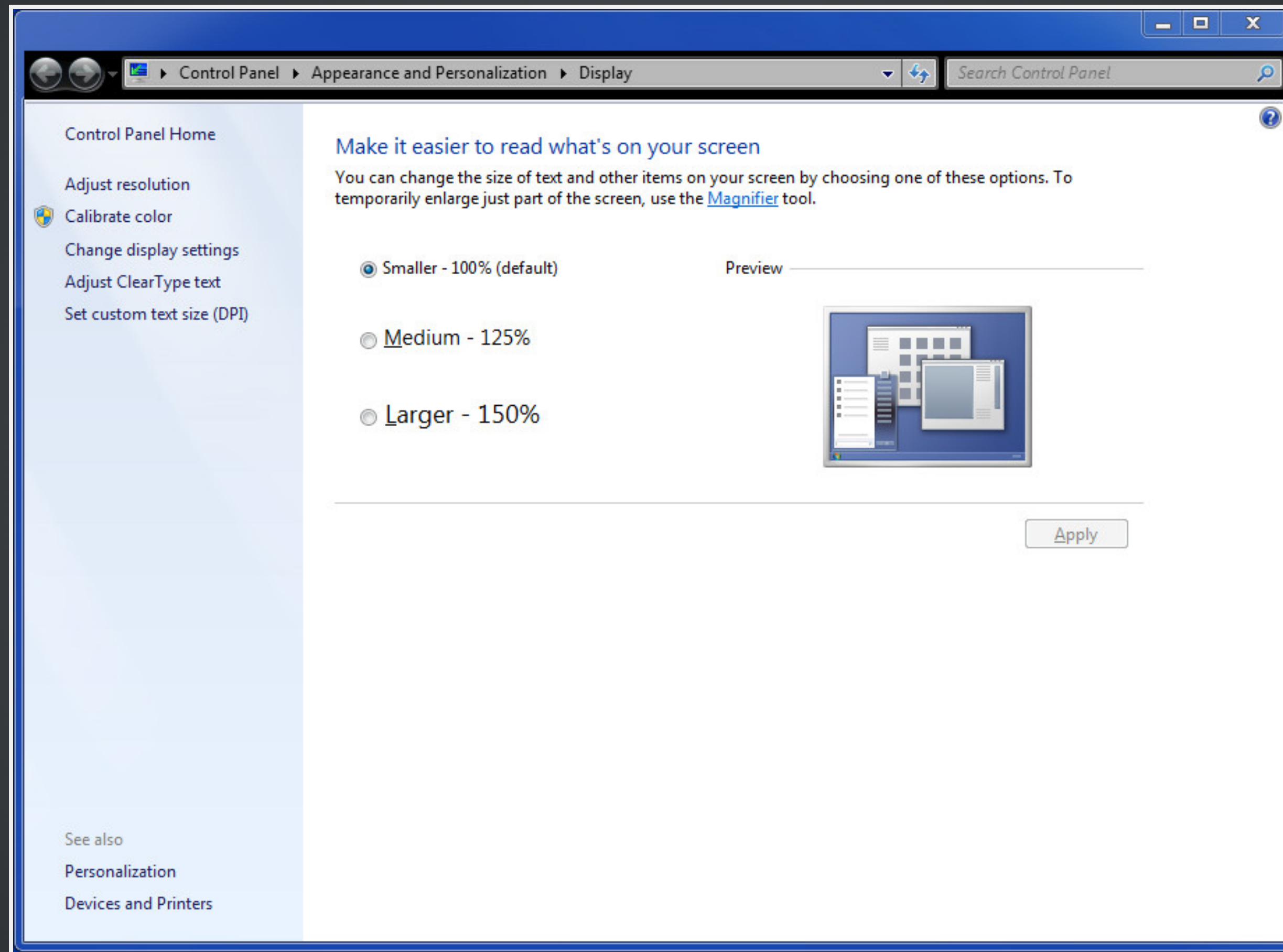
-  display.html
-  GUID-3CAD2766-2DEF-4E05-BDCA-7C59148403BD.htm

 [See more results](#)

display

Log off





HOW TO CONTROL THE SOUND?

Use the Windows sound control in the taskbar

HOW TO CONNECT A USB DRIVE?

USB port attached to keyboard and mouse



HOW TO RUN APPS IN STEREOSCOPIC 3D?

- If your application supports 3D, set it to use *quad-buffer* stereo
 - If quad-buffer isn't available, use *line interleave* (watch out for inverse stereo)
- Passive 3D glasses required
 - Hope to have glasses for checkout at the reference desk in the future
 - Until then, either ask AVL or bring your own (movie theater glasses work)

WHICH APPLICATIONS SUPPORT 3D?

- Images and Videos
 - Stereoscopic Player
- 3D Environments/Models
 - Unity
 - Instant Player (X3D)
- Scientific Visualization
 - ParaView
 - VMD

HOW TO USE A SINGLE DEVICE

WHAT CABLES/DONGLES DO I NEED?

Must accept an HDMI cable



HOW TO FIND THE CABLE?

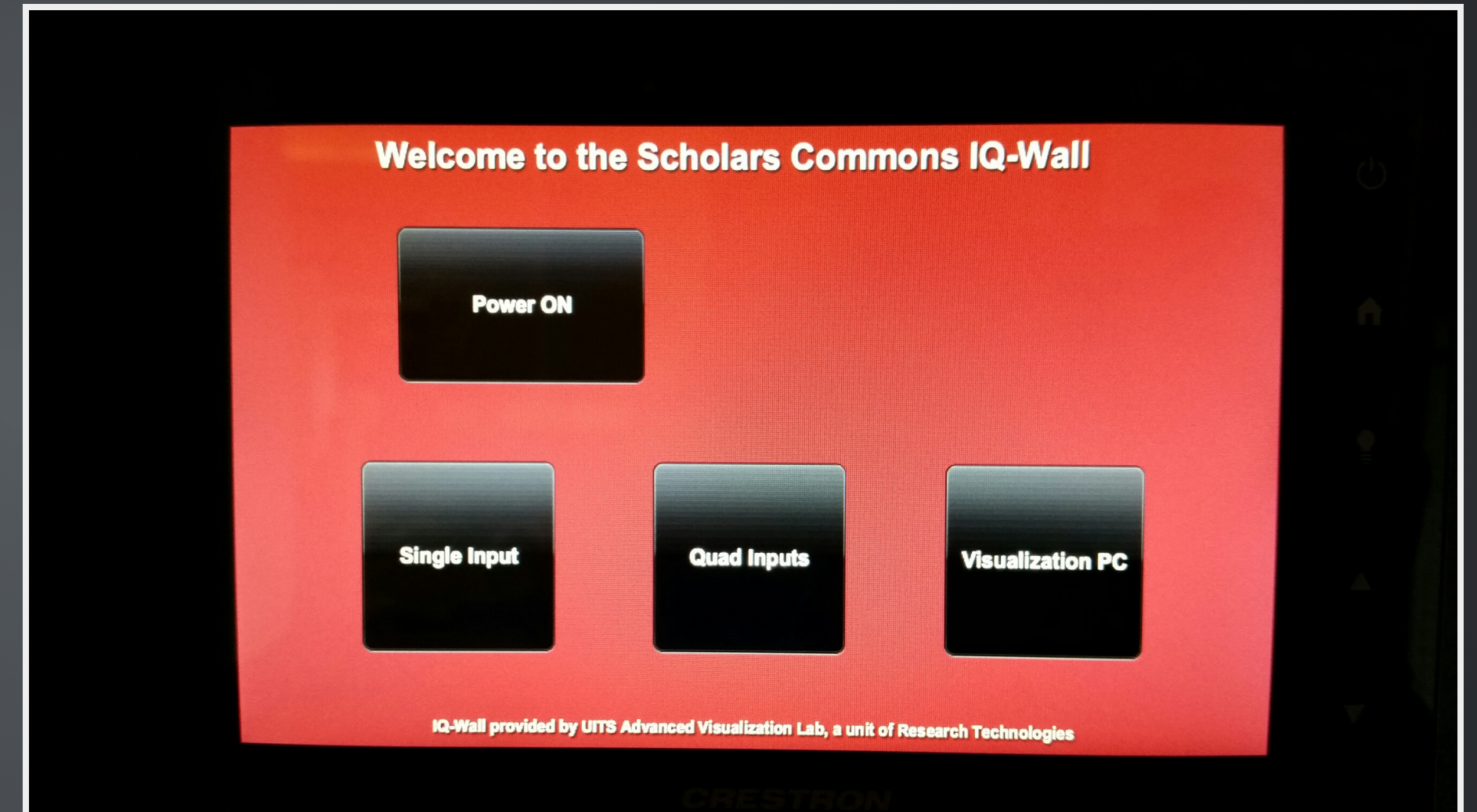
On the floor beneath the screens

Look for the one labeled *Full Wall*



HOW TO PUT THE WALL IN SINGLE-DEVICE MODE?

1. Plug HDMI cable into your device
2. Locate the Crestron control panel on the side of the rack
3. Press *Single Input*



HOW TO SEND AUDIO TO THE ROOM SPEAKERS?

1/8" audio cable attached to the HDMI cable



HOW TO USE MULTIPLE DEVICES

Up to 4 simultaneously

Each device scaled up to fill one quadrant

WHAT CABLES/DONGLES DO I NEED?

Must accept an HDMI cable



HOW TO FIND THE CABLE?

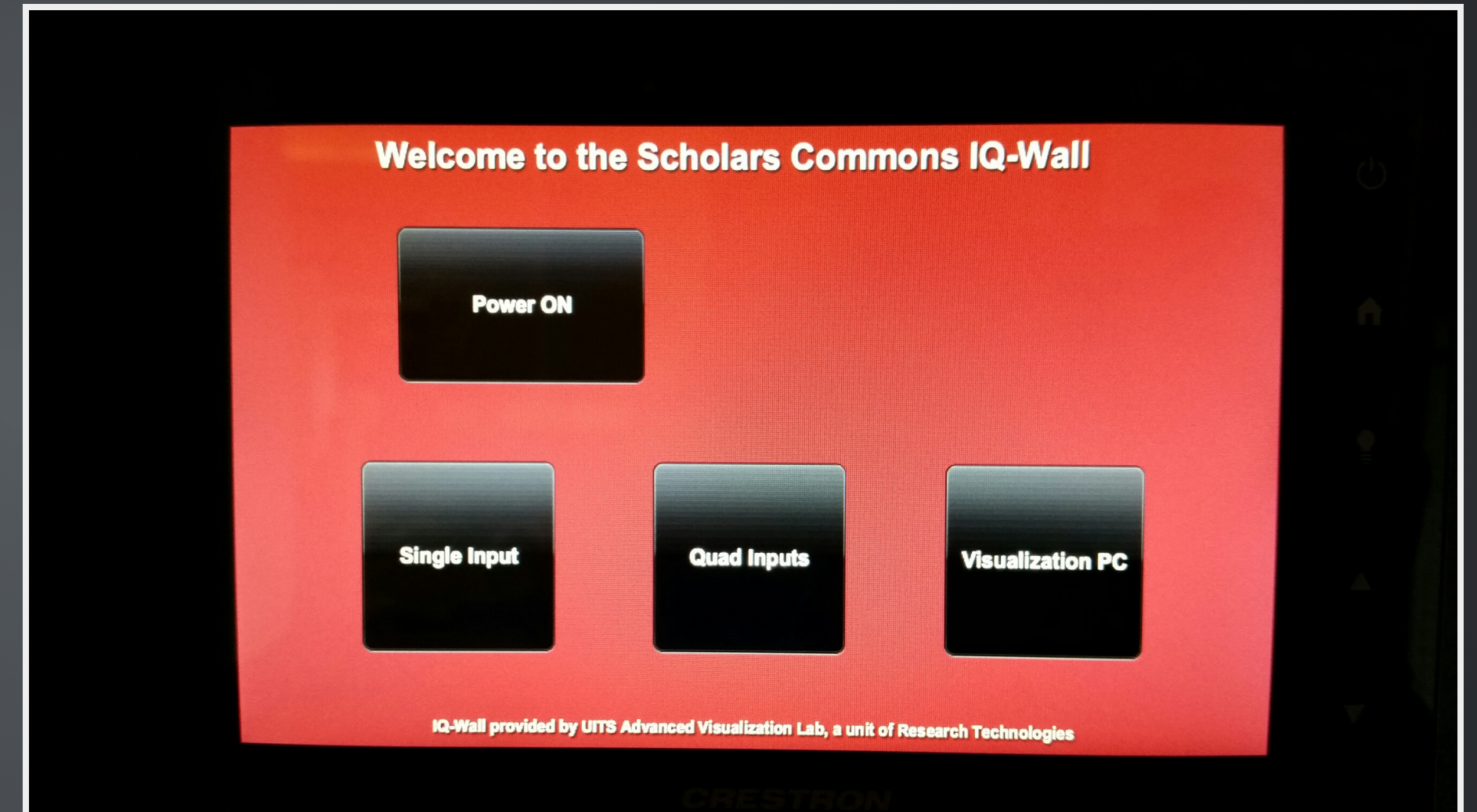
On the floor beneath the screens

Look for the cables labeled A-D



HOW TO PUT THE WALL IN MULTI-DEVICE MODE?

1. Plug HDMI cable into your device
2. Locate the Crestron control panel on the side of the rack
3. Press *Quad Inputs*



HOW TO SEND AUDIO TO THE ROOM SPEAKERS?

1/8" audio cable attached to the full-wall HDMI cable

No audio cables for the quad-input cables at this time



ONE LAST NOTE ABOUT EXTERNAL DEVICES

If your device goes to screensaver/sleep, the displays might get confused.

Don't panic. Just wake it up.

HANDS-ON EXPERIMENT

SAGETM 2

WHAT IS SAGE2?

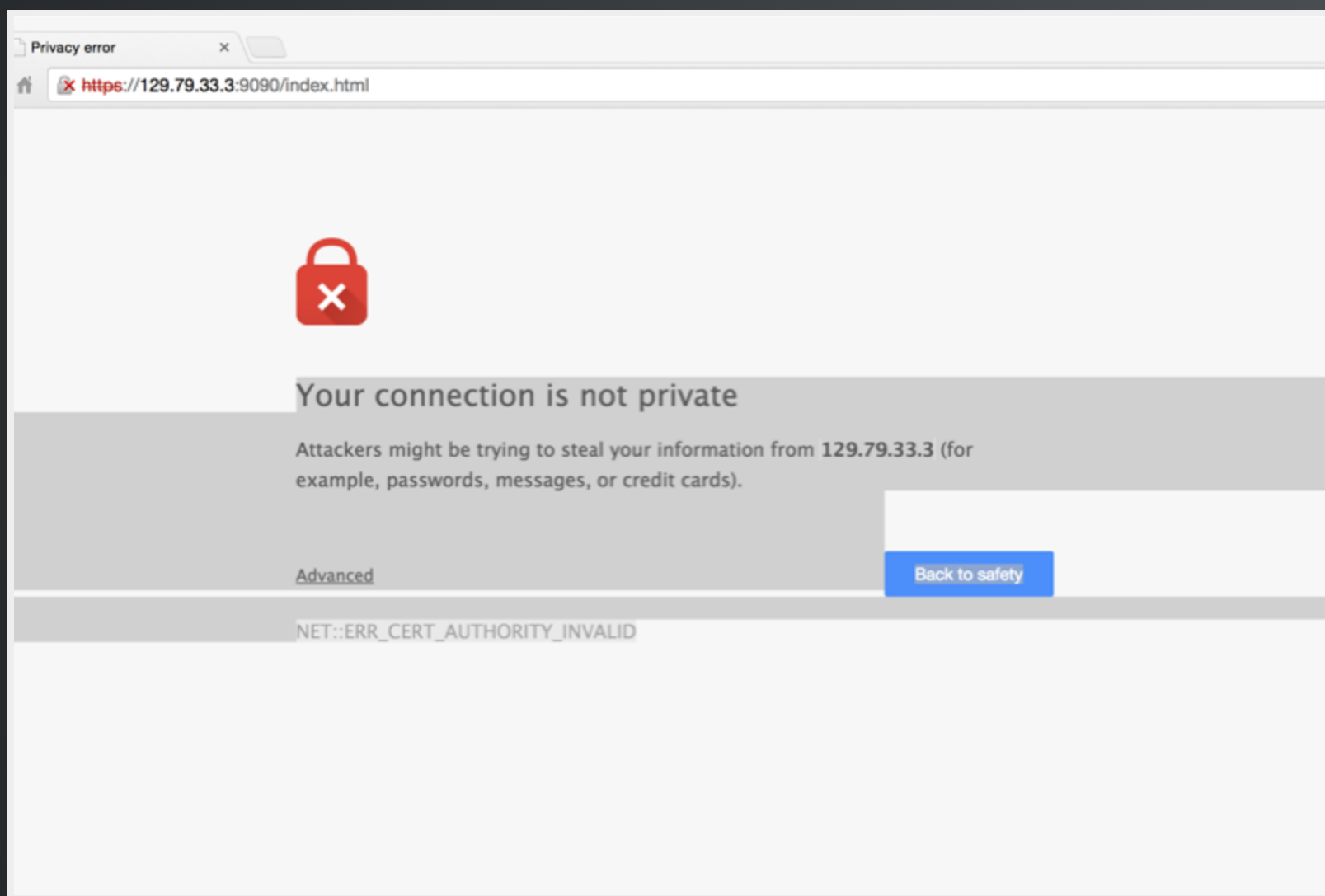
- Scalable **A**mplified **G**roup **E**nvironment
- A tool to "*enhance data intensive co-located and remote collaboration*"
- Envisioned as a blend of the original SAGE and web-based collaboration tools like Google Hangouts, WebEx, Skype

PREREQUISITES

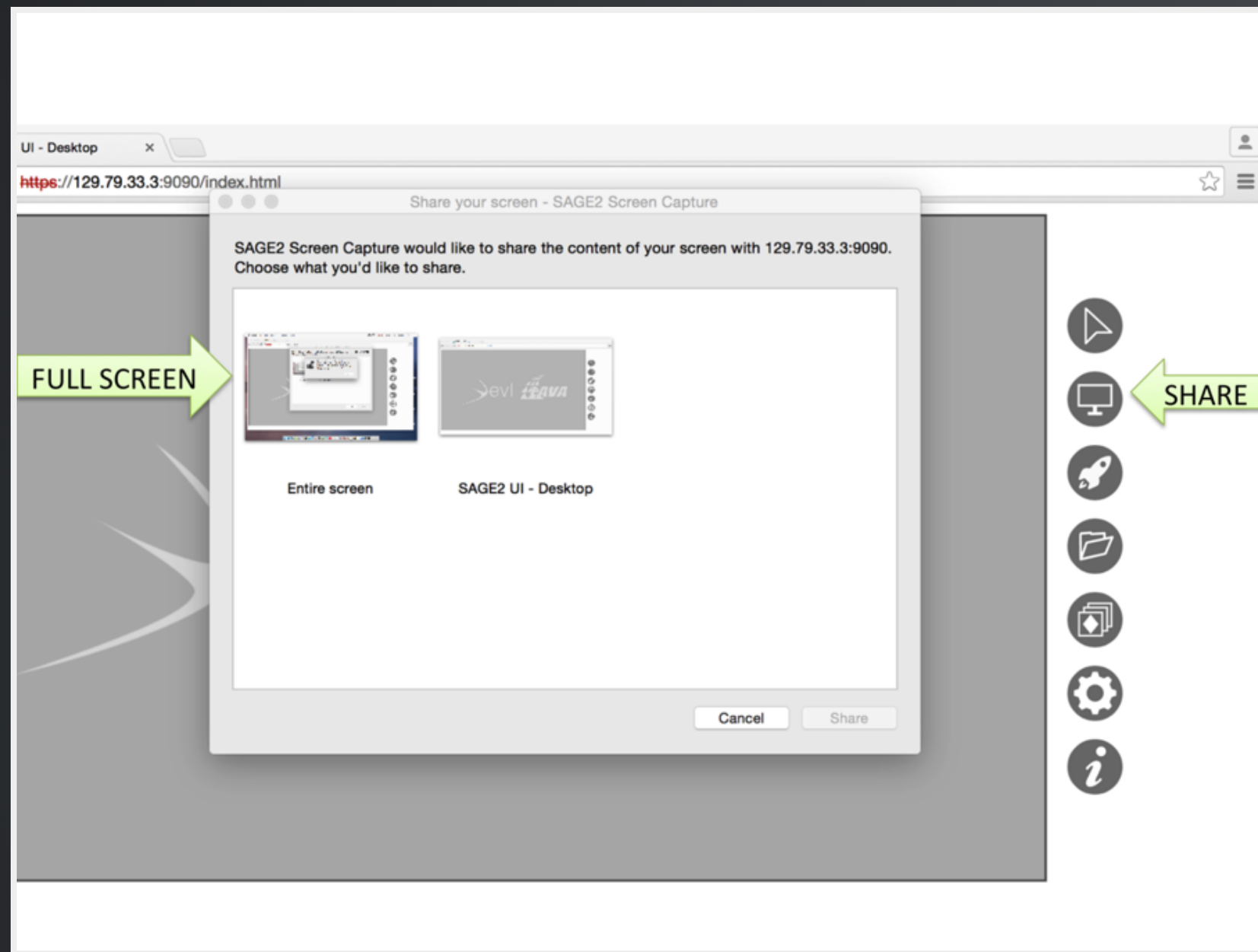
1. Open or install the Google Chrome browser
 - <https://www.google.com/chrome/>
2. Install the SAGE2 Chrome extension
 - Menu/Settings/Extensions/Get more extensions
 - Search for "sage2", install SAGE2 Screen Capture

CONNECT TO SAGE2

1. In Chrome, navigate to *http://tiamat.avl.indiana.edu:9292*
2. Ignore "Your connection is not private" warning
3. Click "Advanced" link
4. Click on "Proceed to tiamat.avl.indiana.edu (unsafe)"



SHARE YOUR SCREEN



1. Click the gear icon and enter your name
2. Click the monitor icon
3. Choose to share either your whole screen or an individual application
4. At the next prompt, select *Entire screen* or a specific window
5. To stop sharing, click on *Stop Sharing* in the popup bar below your browser

HOW TO LEARN MORE

SCHOLARS' COMMONS IQ-WALL

Exchange calendar: *BL-LIBG-SC-157H*

libadmin@indiana.edu

AVL, IQ-WALLS IN GENERAL

avl.iu.edu

vishelp@iu.edu