# INTRODUCTION TO THE IQ-WALL

#### SCHOLARS' COMMONS WORKSHOP

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INDIANA UNIVERSITY

University Information Technology Services



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

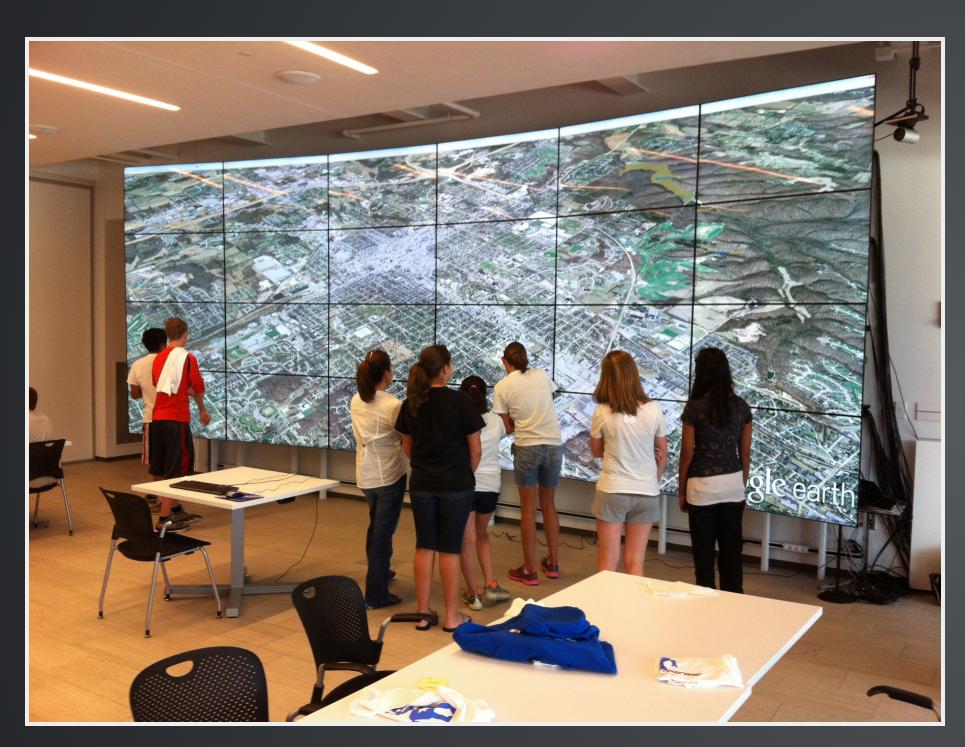
# ADVANCED VISUALIZATION LAB

- 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 (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)

Cyberinfrastructure Building IQ-Wall

# WHY USE THE IQ-WALL?

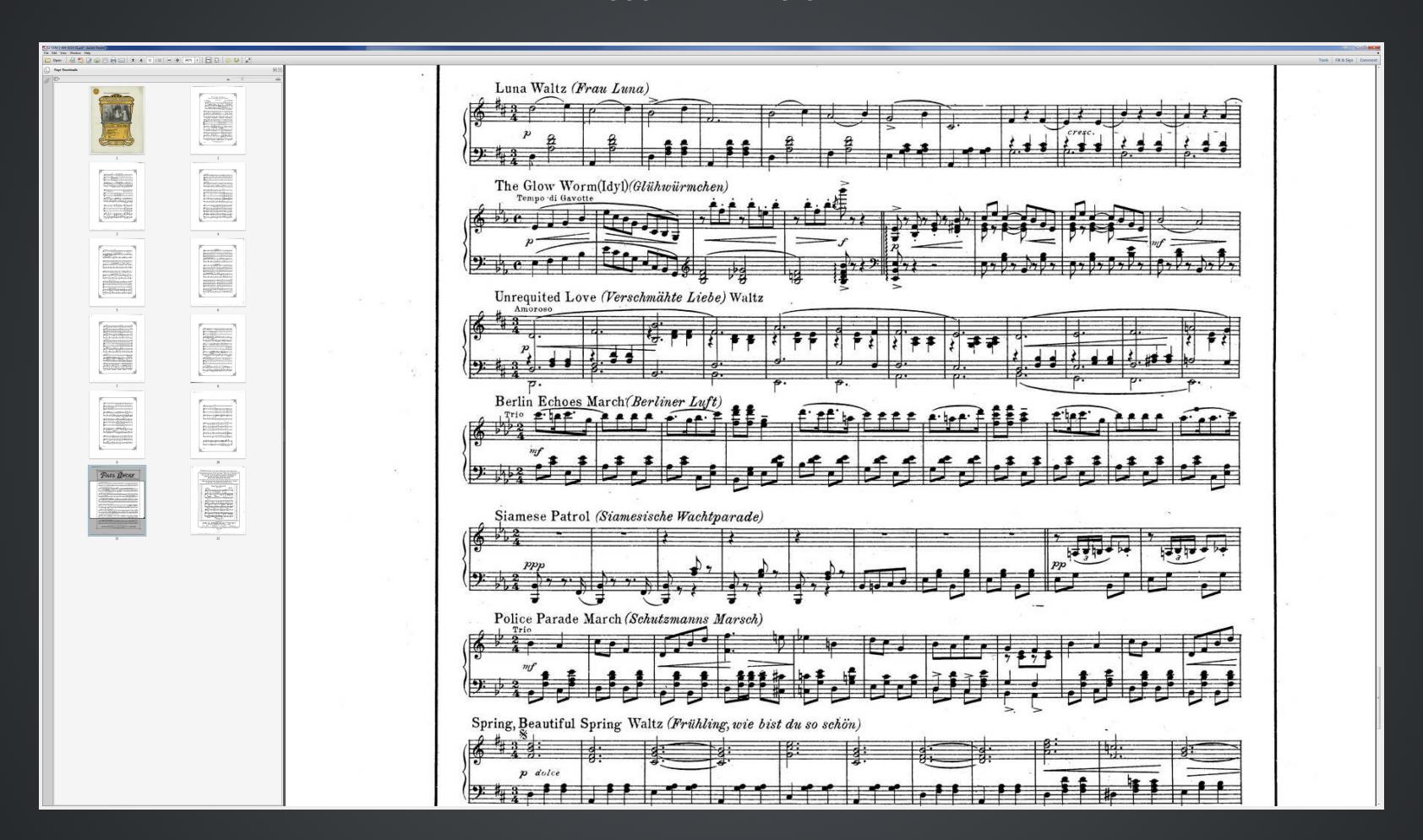
- Size: show something to multiple people
  - 13.5 feet wide
- Resolution: show something very detailed
  - 5464 pixels by 3072 pixels, nearly 17 Megapixels
- Screen space: show many things at once
- Collaboration: multiple people show things at once
- 3D: 3D rendering and stereoscopic presentation
-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

## SIZE EXAMPLES

## **PRESENTATIONS**

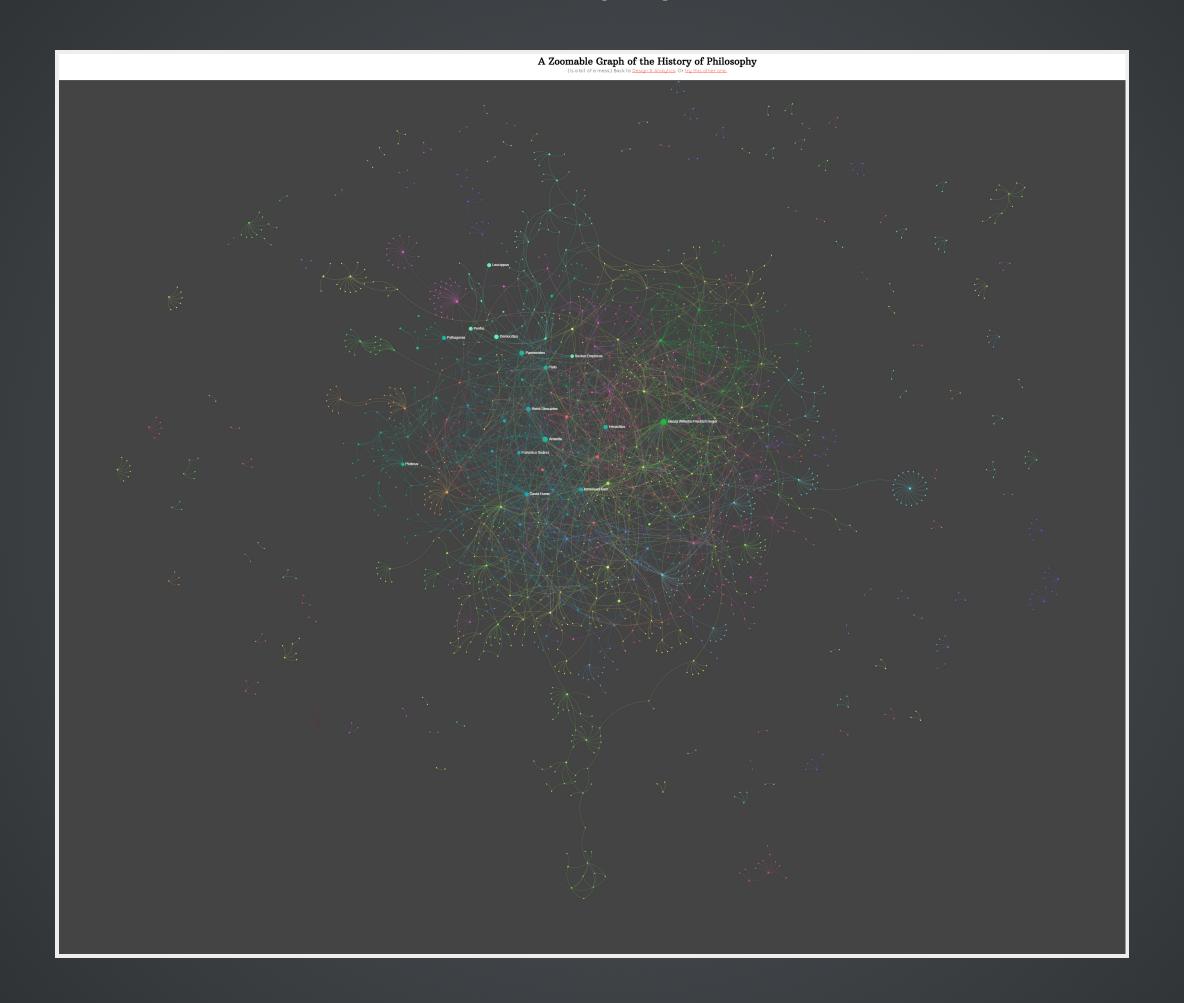


#### **SCORE ANALYSIS**

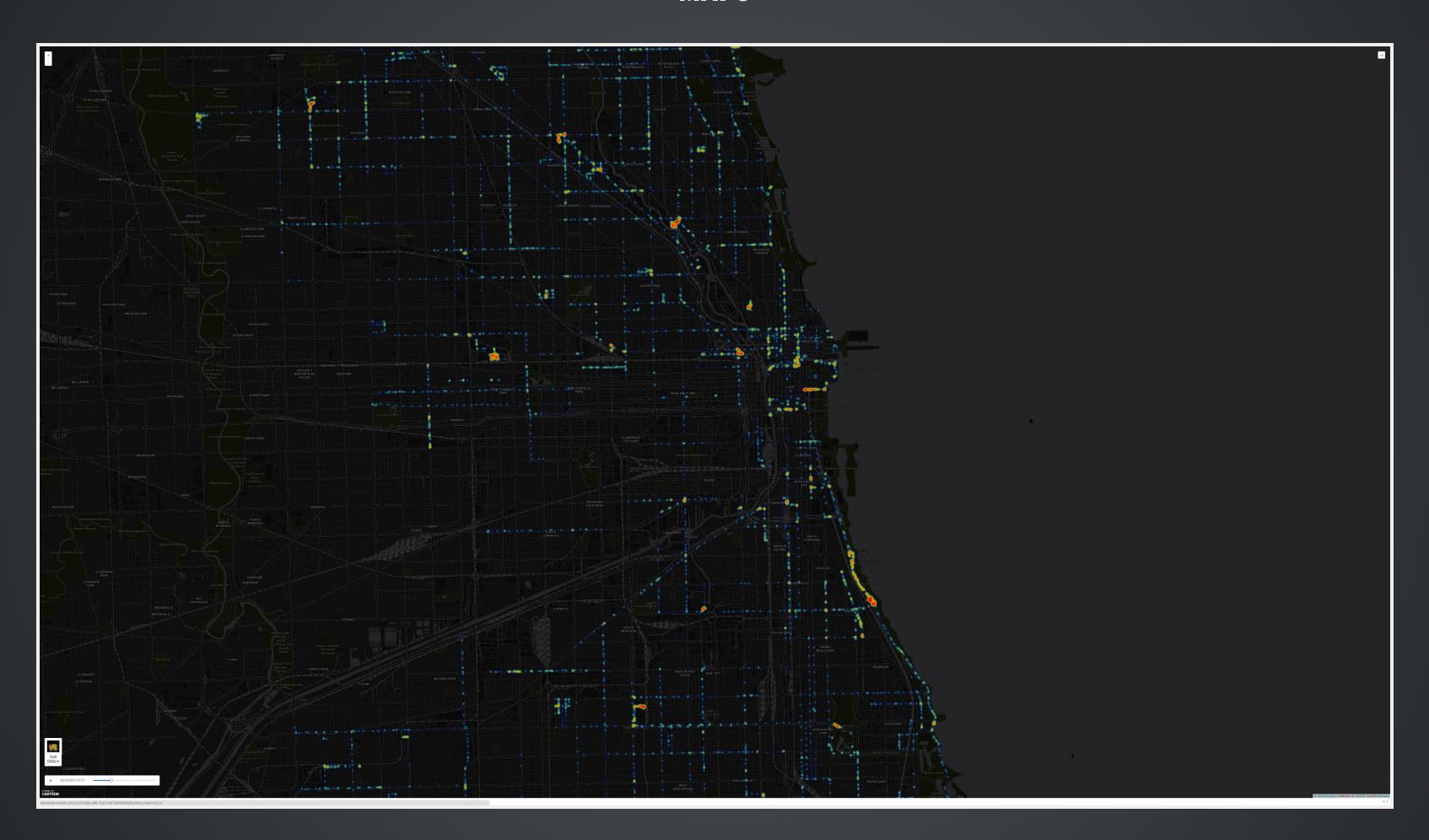


## RESOLUTION EXAMPLES

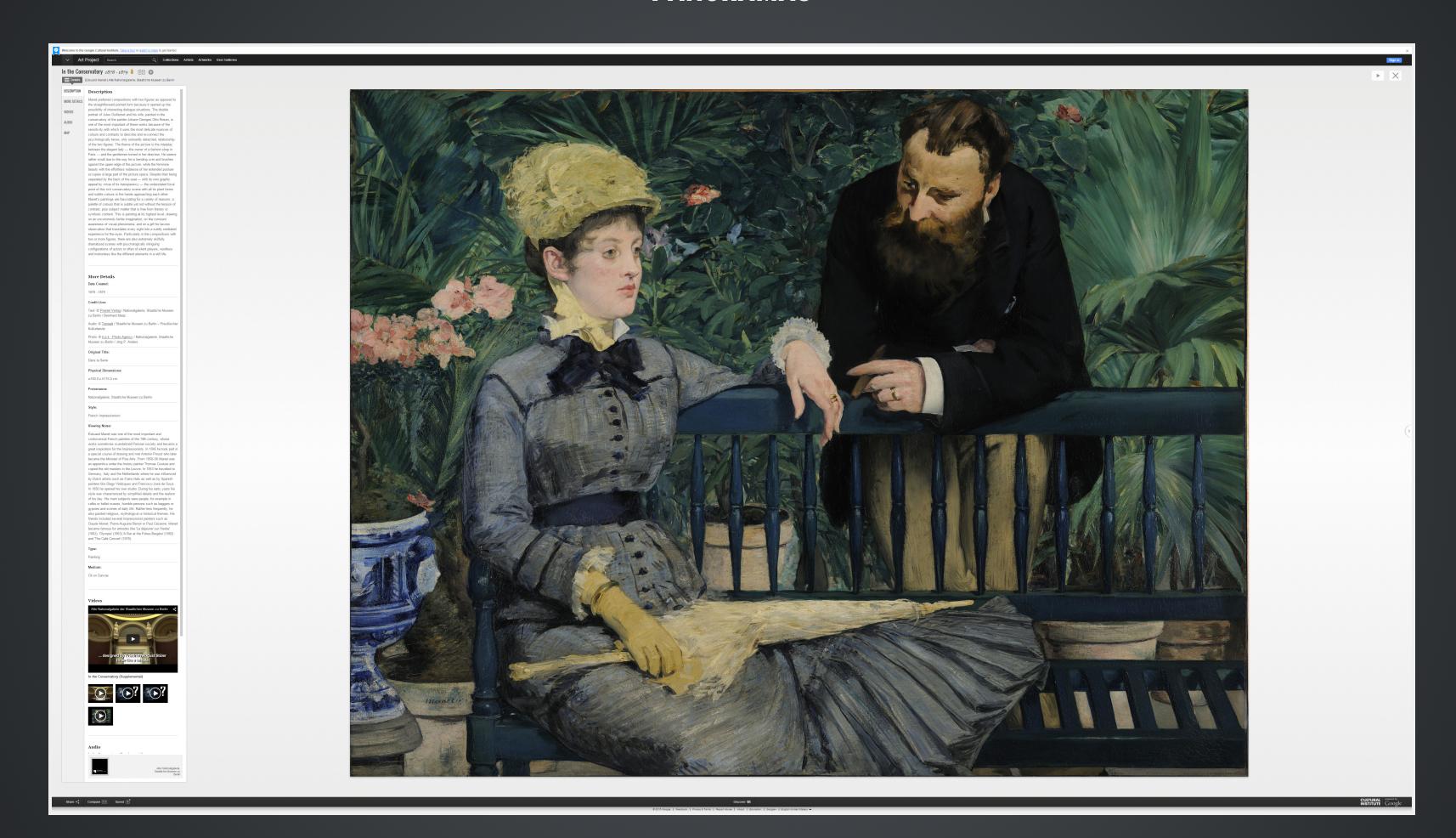
#### **NETWORKS**



## MAPS



## **PANORAMAS**

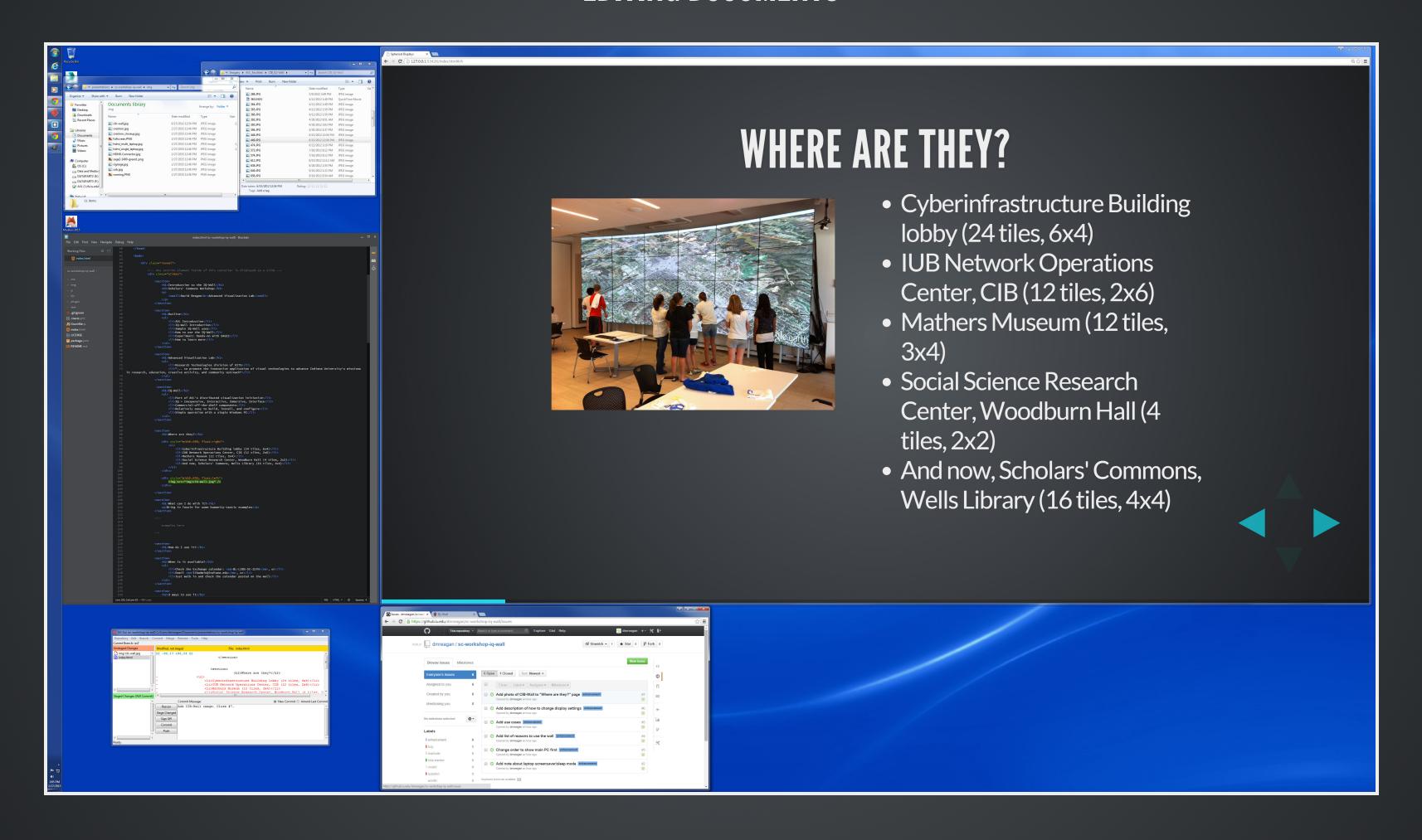


## HIGH-RESOLUTION VIDEO

Source

## SCREEN SPACE EXAMPLES

#### **EDITING DOCUMENTS**



#### DOCUMENT COMPARISON

A most excellent and vertuous Ballad of the Patient Griffell.

To the tune of The Brides good morrow.



When that the Parquelle

Wilhom be most bearely,

beloued as his life .

Hog to proue her patient heart

thereby her fees to bifarace.

that men might pitty her sale:

A bon and Daughter God bab fent.

their Pothers heart full glad.

Was at thele Childrens Chrifining.

and Princely friumph made.

Withich did their Kather well content,

Great with child this Lady was,

And at latt it came to palle,

at one birth the han,

And which bid make

Great royall featling.

Wire weekes together,

All Robles that came thither

And when all thefe pleafant

Sportings quite were bone,

For his young Daughter,

And his pretty fmilling Con.

beclaring his full intent.

Come, let me hatte

200 gracious Lord

the Parquelle a mellenger fent

How that the Babes mult murbed be,

With that faire Griffel wept full loge,

She wanng her bands a faid no moze

Hoz lo the Marquelle bid becree:

the Children, then be faib.

mut have his will abepa.

mere entertain'd and flain

Elwo mody chilagen

Tenderly, and infirely

Pinding in fecret.

Thinking to delwher

A hard bilcourteous parf.

Dio fee that they were bent thus

against his faithfull wife,

A poble Parquelle, as be did rive a hunting hard by a Forrest sive, A faire and comely Maiden, Asthe bib fit a frinning. his gentle ege efpide : Moft faire and loucly. And of comely grace was the, although in fimple aftire; She fung fall fiveetly, With pleasant boyce melodiously, inhich fet the Lozds heart on fire ; The more he lookt, the more he might, Many engied her therefore, Meanto heed his hearts delight. And to this Damiell then he went. God fpeed (quoth be) thou famous Faire Billies of this homely Bower, And fome did call her Beggers bat, Wilyere lone and bertue divels with fweet content. Mith comely gefture, And modest mild behaviour the bade him welcome then, She entertain's bim In faithfeil friendly manner and all his Gentlemen. The Poble Parquelle In's heart felt luch a flame, which fet his fenfes at Arife, Daoth be, faire Daiden, Sheinme foone what is the name I means to make thee my wife

Griffell is my name quoto the,

Farre bout for your begree,

Pay, Griffell, thou art rich, be fait,

A bertuous, faire, and comely Paid

and I will aske no moze.

filly Pathen, and of Parents poze.

Bant me thy lone

At length the confented, And being both contented, they married were with fpeed ; Der Countrep Kullet Was chang'd to withe and Weluet. And luben that the Was trimly tired in the fame, her beauty thined bright, Farre Caining enery Diper faire and Daincely Dame that bid appeare in her fight. Because the was of Parents poore, And timirt her Loed and the (flower, great frife bio raife : Some laid this, and fome laid that, And to her Lord they would her oft dispaile. D Aobie Barquelle. Quoth they, why both thou wrong be, thus balely for to ined. That might haue getten An bonorable Lady into your Maincely bes with will not now Pour Poble Ince Will deride. inhich Chall hereafter be boane, That are of bloud to bale. Borne by the Pothers ave. the which will bring them in scorne But ber therefoze quite away, And take to you a Lady gay, Thereby your Linage may renowned be

Thus energony they feem b to plate,

That malic D Griffells apod effate.

Tabo all this while

The second part To the same tune.

Auil fricene Winters

no wrong the thought boon

All the Land the freeches went

the Marquelle Could married be

Df high vilcent, and to the fame all parties bib agri

The Marquelle fent foz Griffell fatte

The Brides bed chamber to prepare

The Brice was with her Ezother .

Wahich was great toy to all and fom

And at that time through

Union Aoble Laby great,

I hat nothing therein

might be found away:

my most constant white.

FINIS.



She tooks the Babies, Earn from the nutling Ladies, betweene ber tender armes, She often willes With many forrowfull hifes. that the might cafe their harmes : A thousand times my chilozen deare, Out of thy fately garments all, neuer thall I fee ron againe; 'Tis long of me Pour lad and wofull mother here, for whole lake both mult be flaine; now all the clothing must be. had I bene have of Havall race. for my bniporthineffe. Come medenger of beath (quothibe) A great to thee I mult not gine, Take my beareft Babes to thee, And to their gather my complaints erpreffe. He tooke the Chilaren. And to his Roble Batter he brought them both with fpeto, Witho in fecret fent them Unto a Poble Lady to be brought by inveed. Then to faire Griffell With a heavy heart he goes where the fate mildly all alone, A pleafant gelfure, And a louely looke the themes. as if no griefe the had knowne. Sweet Griffell now

declare thy mind to me.

at your command full be.

Booze Griffell thinks the action fit.

But Griffell tooke all this most patiently. And in the morning, Wilsen as they thould be ivedded, Do Aobles murmur faire Griffell at thy hanour and I no top can have her patience then was tribe : Till thou be banisht Griffell foascharged, Both from my Court and prefence. Der felfe in friendlymanner, as they uniuffly crave : for to atrice the Bribe. Chon muft be freipt Mos willingly She dade tonient to bee the fome. and as thon cam'tt to me the Prive in her brauery was bref In fead of Bille and purell Pall, The Poble Parquelle thither came with all his Lozds at his requel. My Lady thou mutt be no moze, D Griffell, I would aske of thee. You might have bene in happy cale, pag Ithy Hogo, which gieves me loge, If to this match then will agree, The poorest life De thinks thy lookes mult noto content thy mind. are insted mondacus con. With that they all began to fmile And Griffell the replide the while, Thee to maintaine while 3 do: line, Againft mp Griffell God fend Lozd Parquege fuch great foce & find. many yeares of top. Cethen gentle Griffell The Barqueile was moued Dio heare these wofull tivings, To fee his belt belouen the teares flood in her eyes, thus patient in billreffe. De ftept wato her, And by the hand he tooke her, Dothing the antimered. Po words of discontentmen did from ber lips arife; thefe words he did erpreffe. Der Meinet Cowne Doft patiently fie flipped off, Ebouart mp Bzide, And all the Brides I weathe to hake. her kirtle of Bilke with the fame, thefe two thine owne chilege the Her Ruffet Bowne (Scoffe The youthfull Lady Total brought againe with many a On her knees did bleffing trane, to beare them her felfe the bib frame, her baother as well as the. (20.he) my chilogen now are flaine, Wilhen fhe was beeft in this array, And you thick ennied ber chate, athat thinks faire Griffell of the fame, And was ready to part away, Cothom I have made my louing Could Gon fenn long life pow bloth for frame, Onto my Lozd (queth the) and honour bertuons life. with you, my Lozd are pleas'd with it, Let no offence be found in this, The Chaonicles of latting fame Mogine my Lozda patting kiffe, whall evermoze ertoll the name De Patient Griffell

farewell my beare, le faid.

London Printed for John Wright

To the tune of the Brides good morrow. From Princely Palace, Unto her Hathers Cottage, poore Griffell noto is come



A Robir Bargarffe . A 38 be bin rice a bouting, hard by a forred fie, A fatre and comely Papten, As ibe nto fir a fpinning, bie gintle e. eripida; Boll tatte And ianeip . And of comety grace was the, although in amp e attice : dbe lung fail fureetly, Bitth piealan: boyce melodienlly, tobteb fet the fintes beart on fire: The moze be lout the moze be might, Many unuice ber therefoze, Ecautie bzed bis hearts belight , Ano to this Tamiell (flower then be fornt : Boo (pet (Chothte) thou femens Matere loue and terine owels with (west content. With comely geffure, And moved milbe behantent the bade him welcame then, Dhe entertain'e bim Ip fattbfull friendly manner and all bis Centlemen : Ebr Poble Wa quelle Bi's beart telt foco aflame. mbich fet bis fenfes at Orife: Danth be . fatre Mayben . Shel me lene what is the name, a meane to make the mp wife. Griffell is my name gratb the, Facre buft for your beard, A fill abayben, and of parents benze Bap Griff.ll thon art rich,be faib, A ver pous faire and comaig Payo, Brant me ibr lone, and & will aske no more

At length the confented. Witen that the Marqueffe And being borb contented Die fe that thep were bent thus thep married were with fpeb: againg bie fautfull wife, Ber caputry Kallet Wilbam be mell bear ly, Was chang'o to fike and beluet. Menterty and entirelp as to her fate agrad: beloute as his life : And wben tat Aice Dinbing in fecret Was trimip tpast in the fame. For to prone ber patient heart. ber beautie Gineb balabt , thereby ber fore to offgrace, Farre Carning enery Ebinhing to fem ber Diber tatre and princely Dame Abardolleonricone part, that ith appeare in ber fight. that men might pitrie ber cafe : Breat with cuite this Laop was ; Becaule the tras of parents pope, And at lad it came to palle, and thirt ber Lazd and fie E wo awdis chitozen great firite Die saple : at one birth the bab . Come fath this and forme faid that. A fonne and daughter Bob bad fent. Faire Bieris of tots bomely bower, And fome ote call ber beggars bat, Bhich old their father weil content, Andto ber & 020 And which ato make thep would ber eft bifpgaife. their Potbere beart full glab. Speat ropall fraffing Dh Roble Barquelle, , Was at this childrens Chriffning, Daoth thep, toby dell thou wang be and Princely trimmph mane, thus hafein for to toed. That might bane gotten Sire weites together, An ponourable Leby All Robles that came thither. into pour Paincely bed? were entertain's and fait: Wibo toll not note And when all thele pleafant Pour Reble iffne fill beribe, Speztings anite mere bone. the Parquelle a mellenger fent, which thall bereatter be bezne : That are of bled to bate Forbie yeang banabter. Anohis pretty failing fonne, Beane by the mothers fice. the which will bying then in frome? prelating his full intent . Bow o the babes mult murthered be, Par ber therefoge quite away , Forfo the Barquelle oto Decree: Ano take to pan a Laop gay, Come let me bane Balbereby rour linage man renotoned be. the chilegen, then be fair. Witt that faire Griffell mept full fore Thus enery bay they fem'e to prate, She woung per bancs, a fato no moze That malic'o Griffels goo chaie, Wibó all this while My gracious Loga toke it molt patiently: mad baue bis will aben'o.

A most excellent and vertuous Ballad of the patient Griffell:



TO THE CONTROLL OF THE CONTROL OF TH

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ELECTRONICA CONTRACTOR The second part, To the same tune.



C De toke the Babes ,

With many fogrowfall killes .

She often billes,

Farewell, farewel',

But pon mott die

Anotatheir father

De teike the chilogen,

And to bis Deble Bader

Mile in fecret fent them

to be brought bp indeen :

With a beanir beart be goes,

And a lonely lake for the mes,

Unte a Roble Lapp ,

Eben vo fatte Griffell,

A pirelaut geffare.

bweet Grifell asto

Both Tano mine

Beclare the a inde to me.

at your command will be.

Dith von wy Lo; Dare pleafed with it Let no offence be found in this,

Boge Griffell thinkes the action fit, To gine my Loge a parting kille,

Whith matery eres,

farewell my beare be faie.

Printed at London for H. Goffen

for my baworbinelle.

mp complaints erazeffe.

An Dobles murmure . Faire Griffell at thy bonour . Denen fram the narting Labies, betteene her tender armes ! and Ino top can bane, Mill then be ban fit Both from my Court and patience, as they buigfip crage: that the might rate their harmes, Then met be fiript Dut of thy fately garments all. A thousand tim s, my chilogen beare. and as thou cam'ft feme, neuer Gail I fee pen againe : Eis long of me , Pour fab and wofall mother bere, In tomely gray, In Bead of wylle and purell Pall, for whole fake both meff be fiiner now all the clothing maft be. Dad I beene home of royali race, De Laip thon mul beno moze, Rog athy Cogo which grienes me lage If to this march than will agre Dou might bace ttu'o in bappy cafe, Che papell iffe mud now content the minbe. Come meffenger of beath quoth thee) a groat to thee 3 muft not gine, Malle my ceareft Babes to thee. The to maintaine tobile 3 Doe line, Againft mp Griffell inch areat toes Tfinbe. Caten gentle Griffell Die beare thele wofull fpbings, be brought them both with fpeed, the teares food in her eyes, Pothing the anlivered, Po words of discontentment bio from ber lips arife : Der belget Gobine Boff patiently the flipped off, ber kerttle of like with the fame, where the fate milotig all alone Ber Huffet Cowne (fceffe, Was brought againe with many a to beare them ber felfe the Dio frame her bather afwell as the as if no ertete the has knowne-(Daoth te)apthilogen noware flaine, Wilhen the was belt in this array, Waat thinkes fatre Griffell of the fame And was ready to part away, Boe fend long life buto mp Logo (quoth the)

bhelived there contented. no wrong the thought been! And at that time through All the Land the speeches went, the Barquelle could marrie be Anto a Robie Lady great , Df bigb befcent , and to the fame all parties bio agre; Ebe Parquelle fent fo; Griffell fetre, The Brides bed chamber to prepare, Ehat nothing therein might be found away: (come, The Brice was with ber brother Which was great toy to all and fome. But Griffell toke all reis mod patiently. Soo in the morning , When as they thouto be wedded, ber pattence then was trice: Griffell mas charged, Ber felfe in frtendip manner . for to attore the Prine . God willingip Dope gaue content to boe the fame, the Brive in her brauerte mas breff. And prefently Ehe fable Parquelle thither came. with all bis Lozos at bis requet, D Griffell, 3 wonio aske of thee, Dethinkes the lokes are wered wandjous cop. Mith that thep all began to fmile. And Griffell the replide the toblie, Coo fend Loze Barqueffe many yeares of top. The Parquelle was monen . Wo fce bis bett belaned thus patient in biareae, Be Gept bnto ber ,. And by the band be tote ber. thele words be dis expresse. Thou art my Bribe. And all the Waloes 3 meane to hane. thefe two thine owne children be. The youthfull Lang Do ber kases bie bleffing craue, And you that enuved ber effate. Wathom I batte made my louing mate Pow bluthter thame, and honour bertooes life. The Chronicles of tafting fame Shall enermoze erteil the name Di patient Griffell my mol condant foife. Finie,

From Princely Balace .

Rall Arteene winters

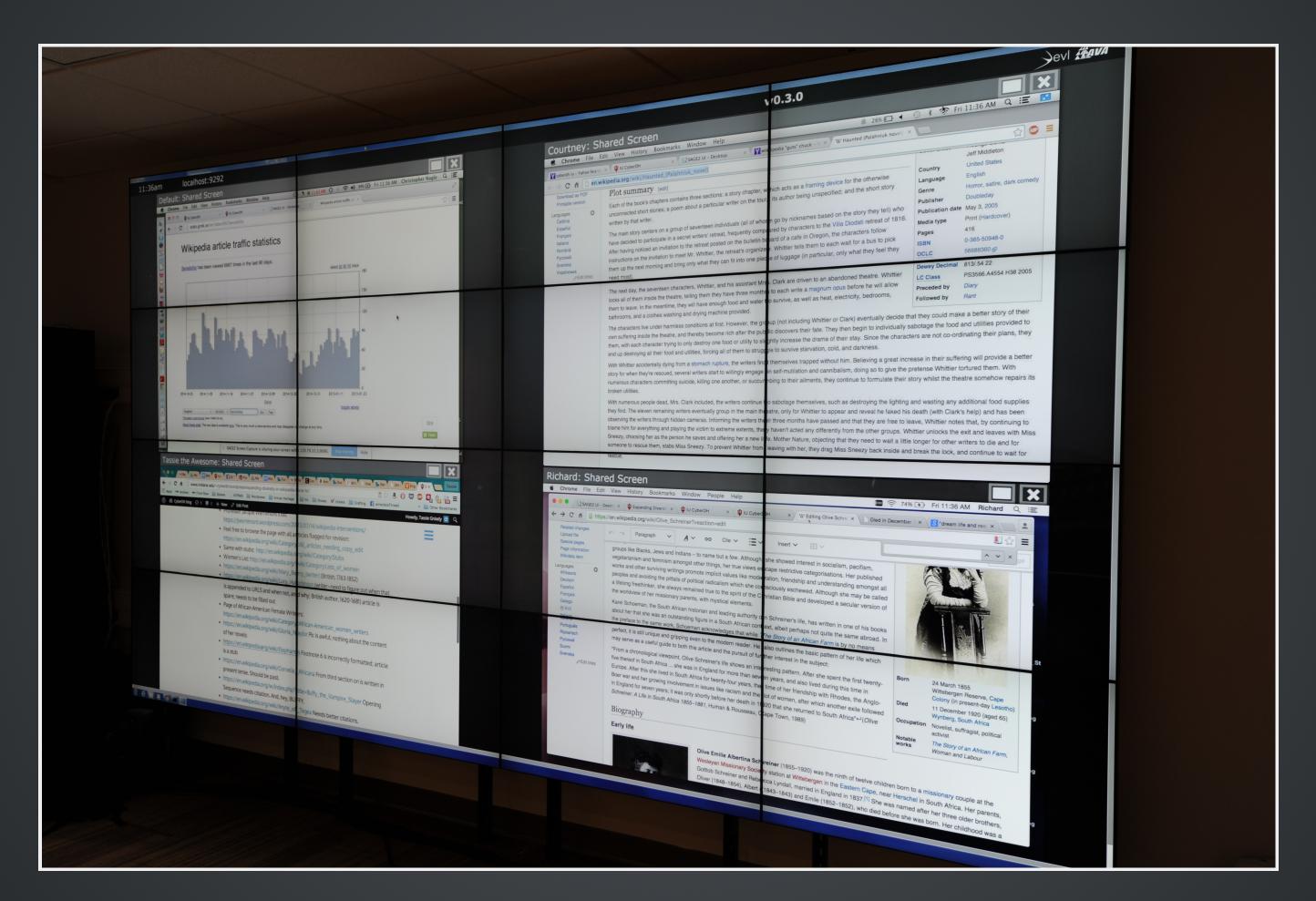
Unto ber fathere Cottage !

pore Griffell note to cone :

Source: EBBA

## COLLABORATION EXAMPLES

#### **HACKATHONS**



## 3D EXAMPLES

#### MODEL VIEWING

Indiana University: Rose Well House by Matthew Brennan on Sketchrab

## STEREOSCOPIC WALKTHROUGHS





# 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?

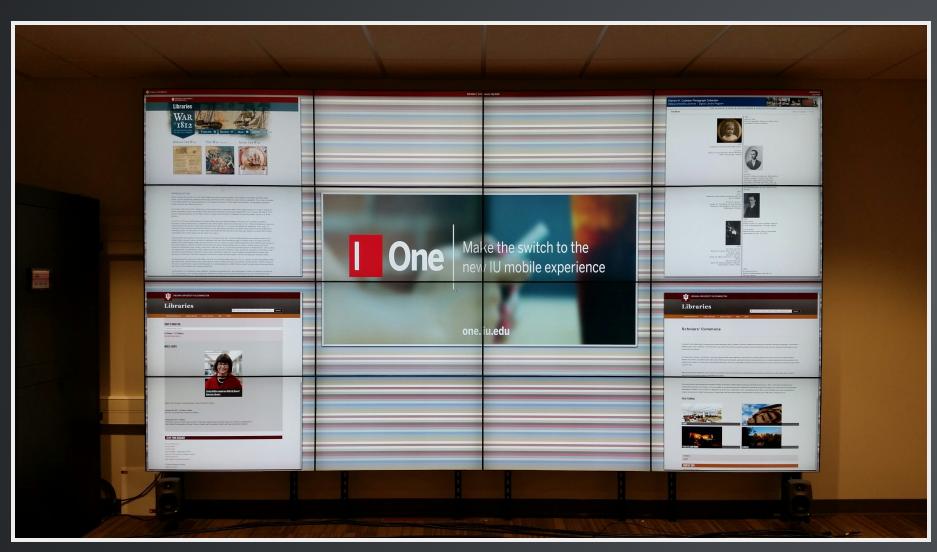
- Only way to use full wall resolution
- Likely more powerful than your laptop
- Accessible to all IU students, staff, faculty

## 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?**



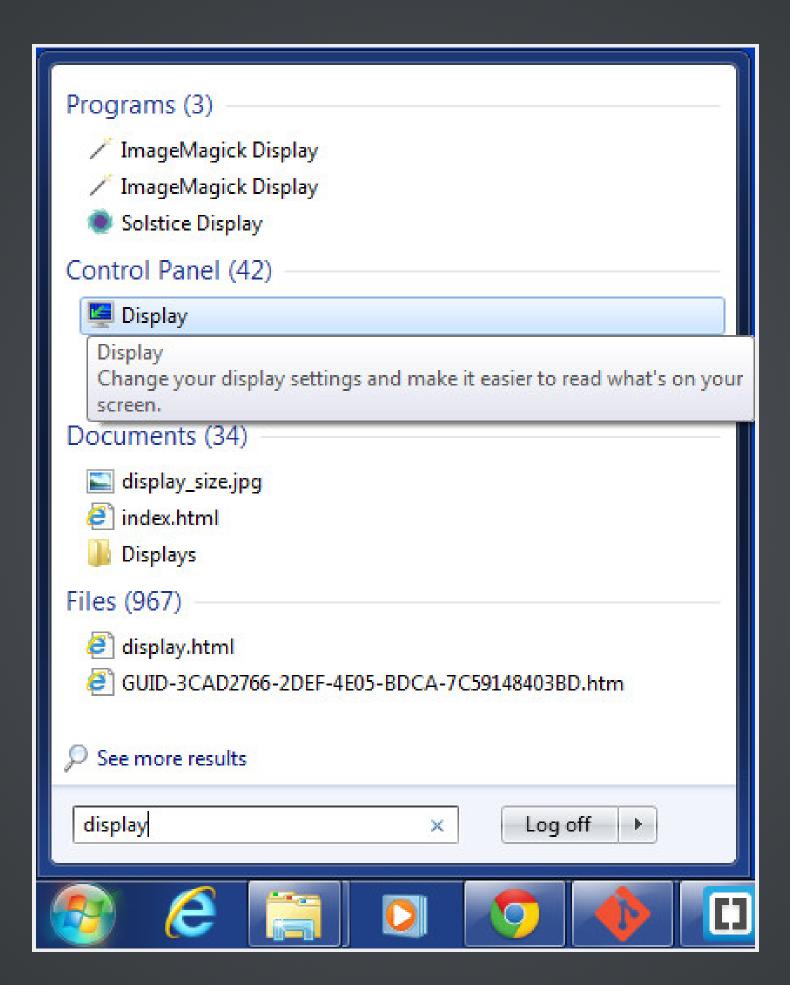
- 1. Locate keyboard and mouse near the rack
- 2. If signage is running, press Ctrl+Alt+Del to show login screen
- 3. Enter IU username and passphrase
  - Tip: may be necessary to enter ADS\username

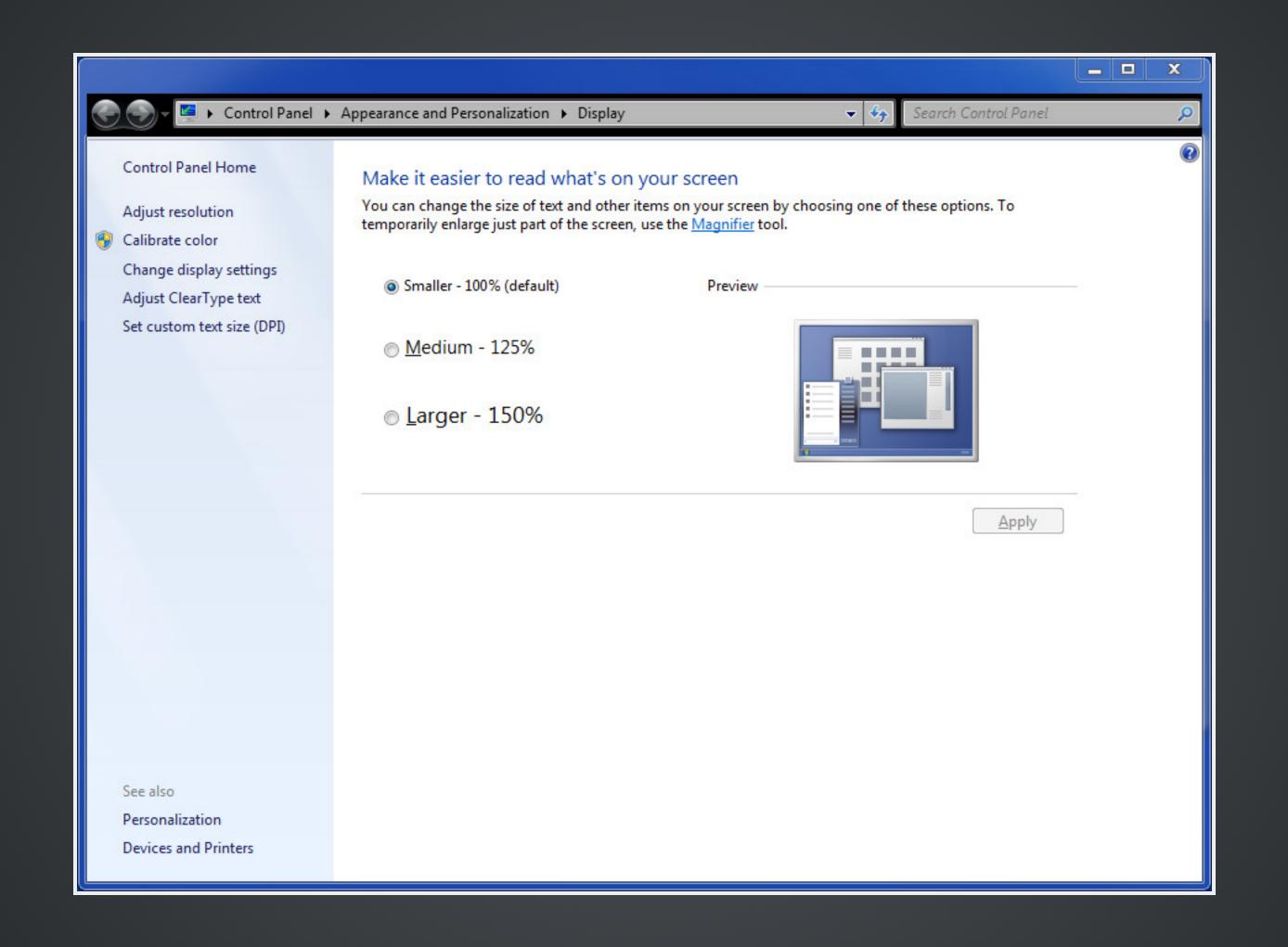
#### WHY IS THE TEXT SO SMALL?

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





## 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?

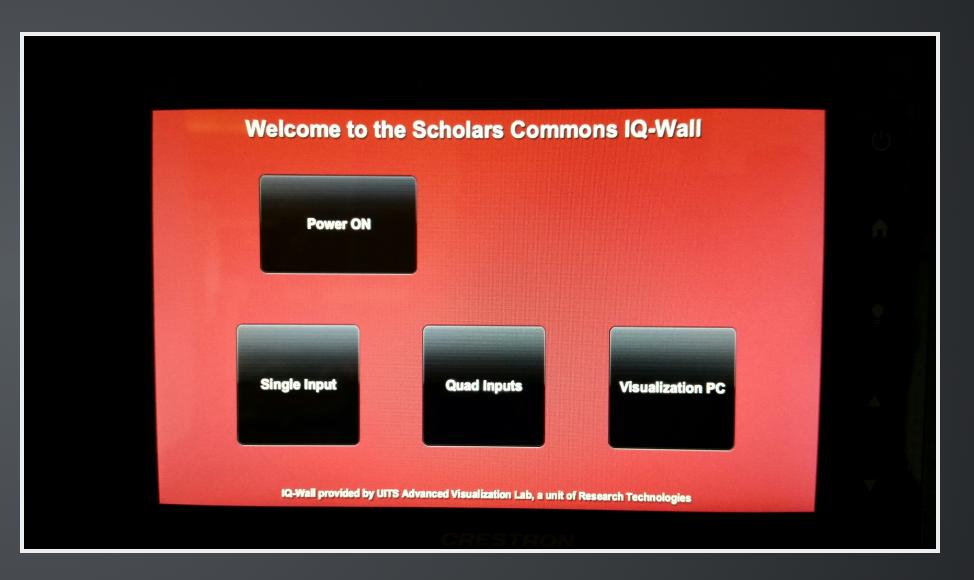
On the floor beneath the screens Look for the one labeled *Full Wall* 



#### HOW TO PUT THE WALL IN SINGLE-DEVICE MODE?

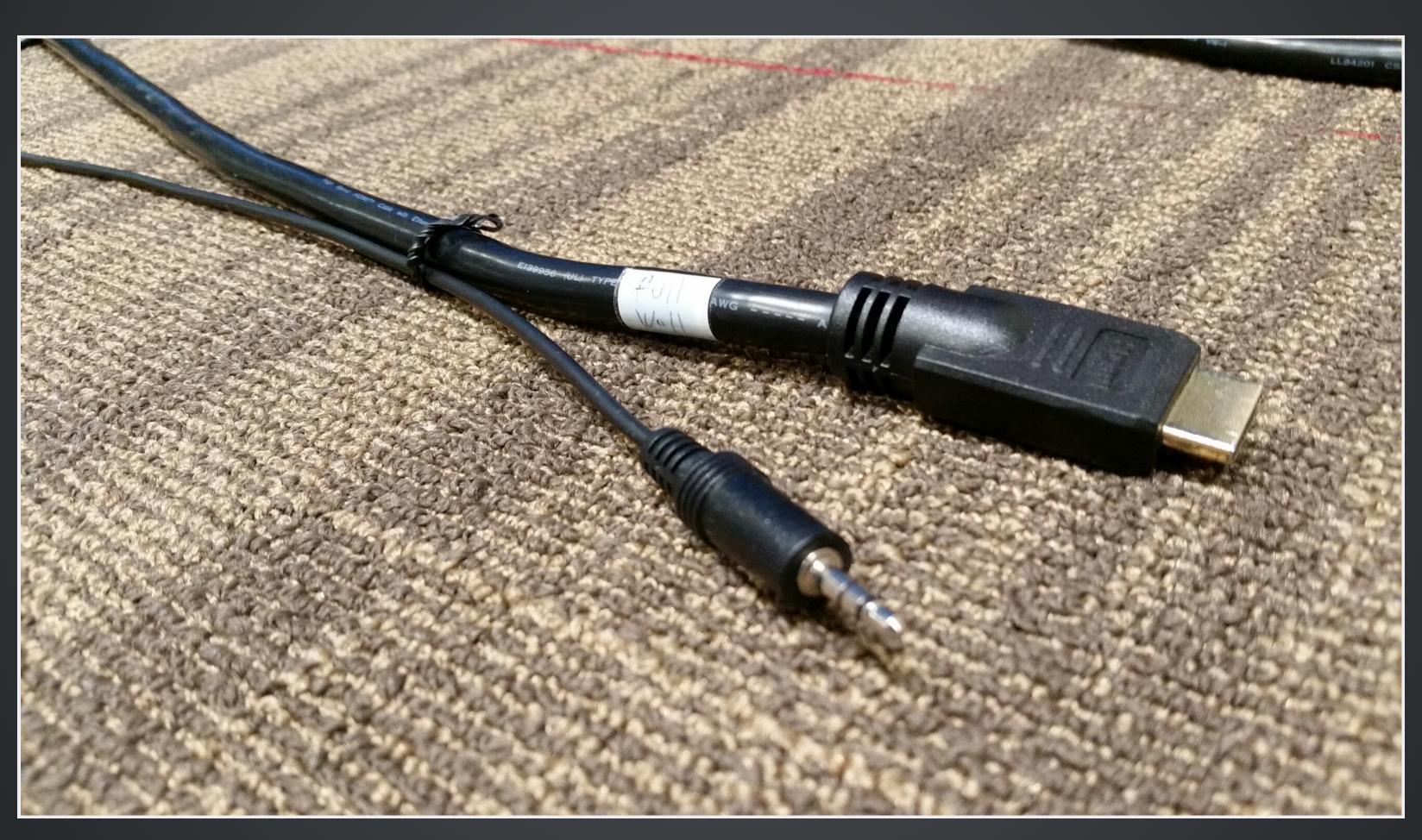
- 1. Plug HDMI cable into your device
- 2. Locate the Crestron control panel on the side of the rack
- 3. Press Single Input





## 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

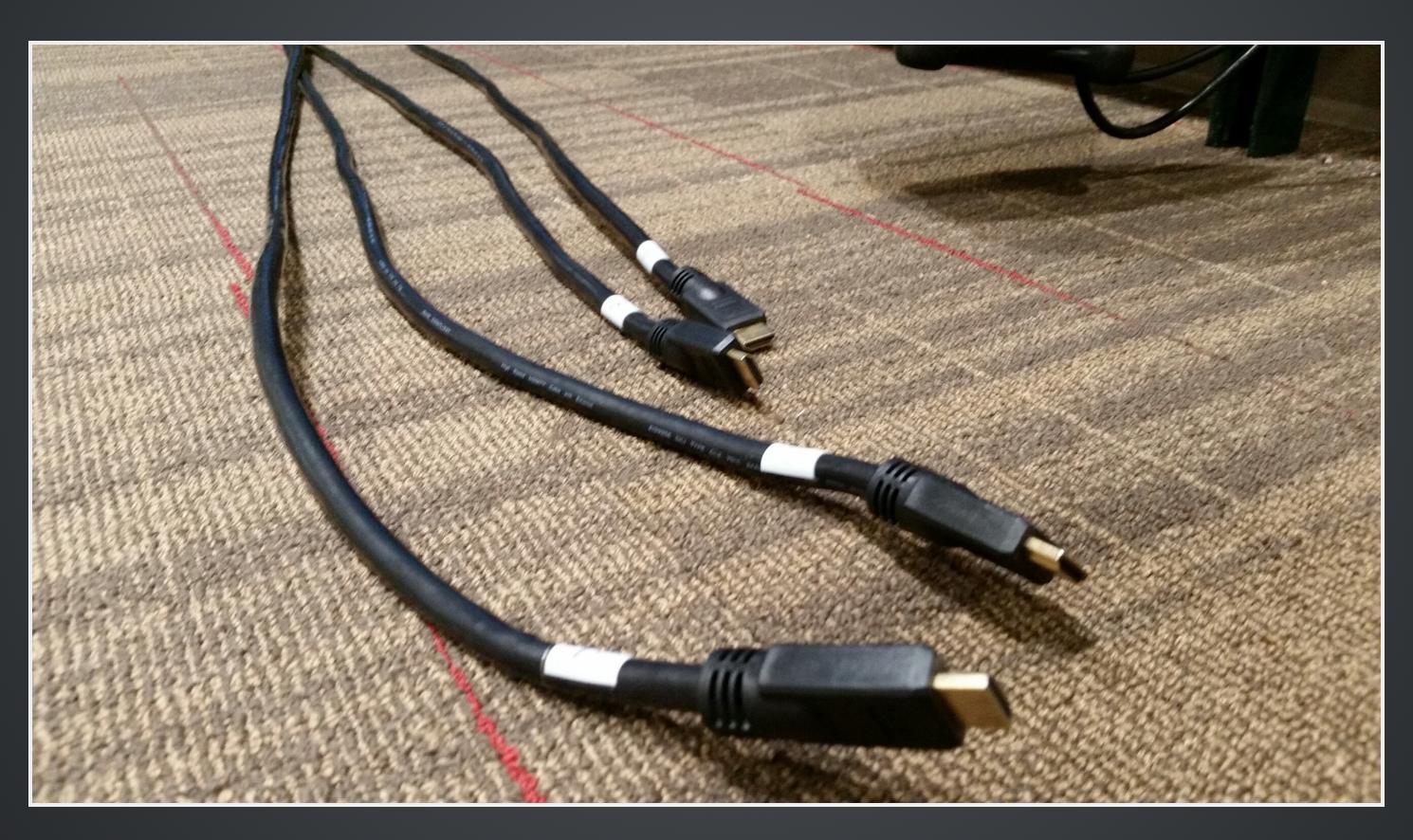
## WHAT CABLES/DONGLES DO I NEED?

Must accept an HDMI cable



### HOW TO FIND THE CABLE?

On the floor beneath the screens
Look for the cabels 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



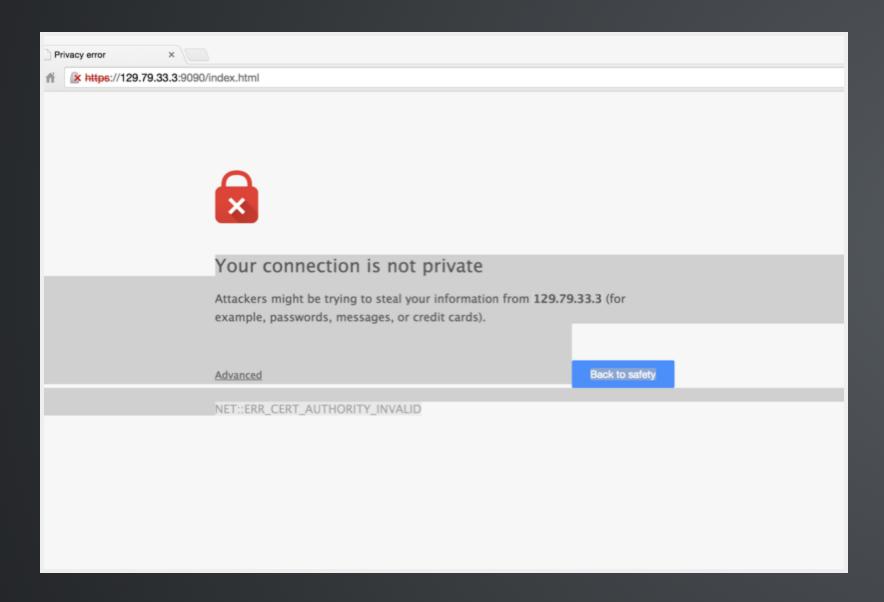
## WHAT IS SAGE2?

- Scalable Amplified Group Environment
- 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**

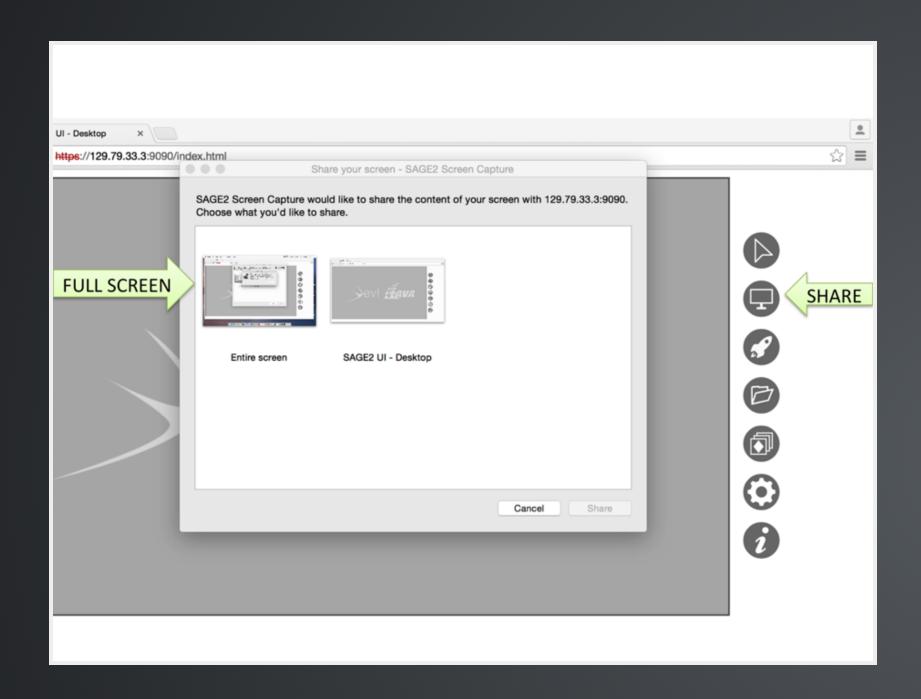
- 1. Open or install the Google Chrome browser
  - https://www.google.com/chrome/
- 2. Install the SAGE2 Chrome extension
  - Menu/Settings/Extensions/Get more extensions
  - Search for "sage2", install SAGE2 Screen Capture

# 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