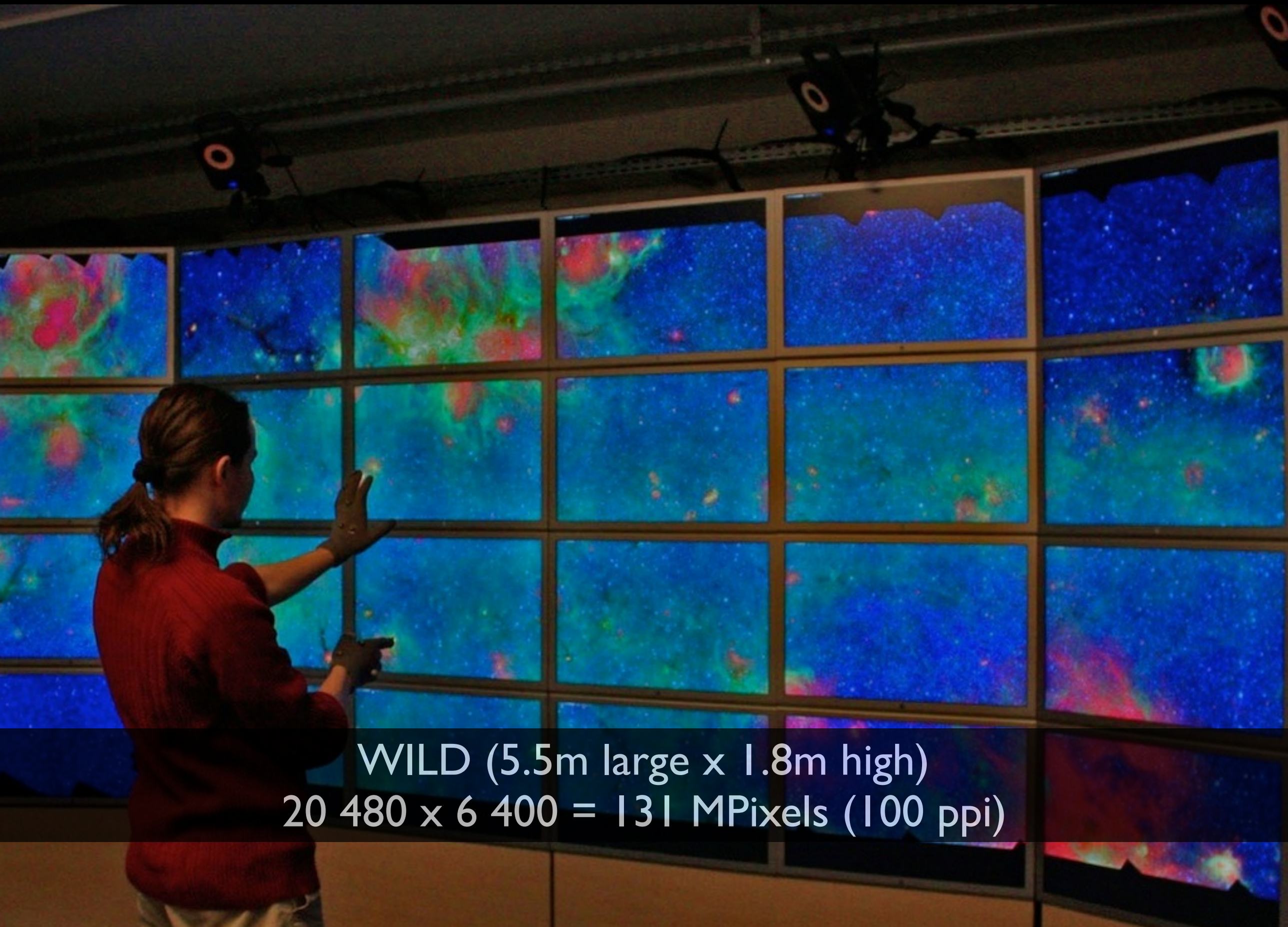
Ultrawalls and interactive visualization

CDS 2.0 Pitching Day
2016-11-09

Emmanuel Pietriga, Olivier Chapuis


WILD (5.5m large x 1.8m high)
20 480 x 6 400 = 131 MPixels (100 ppi)

VGA

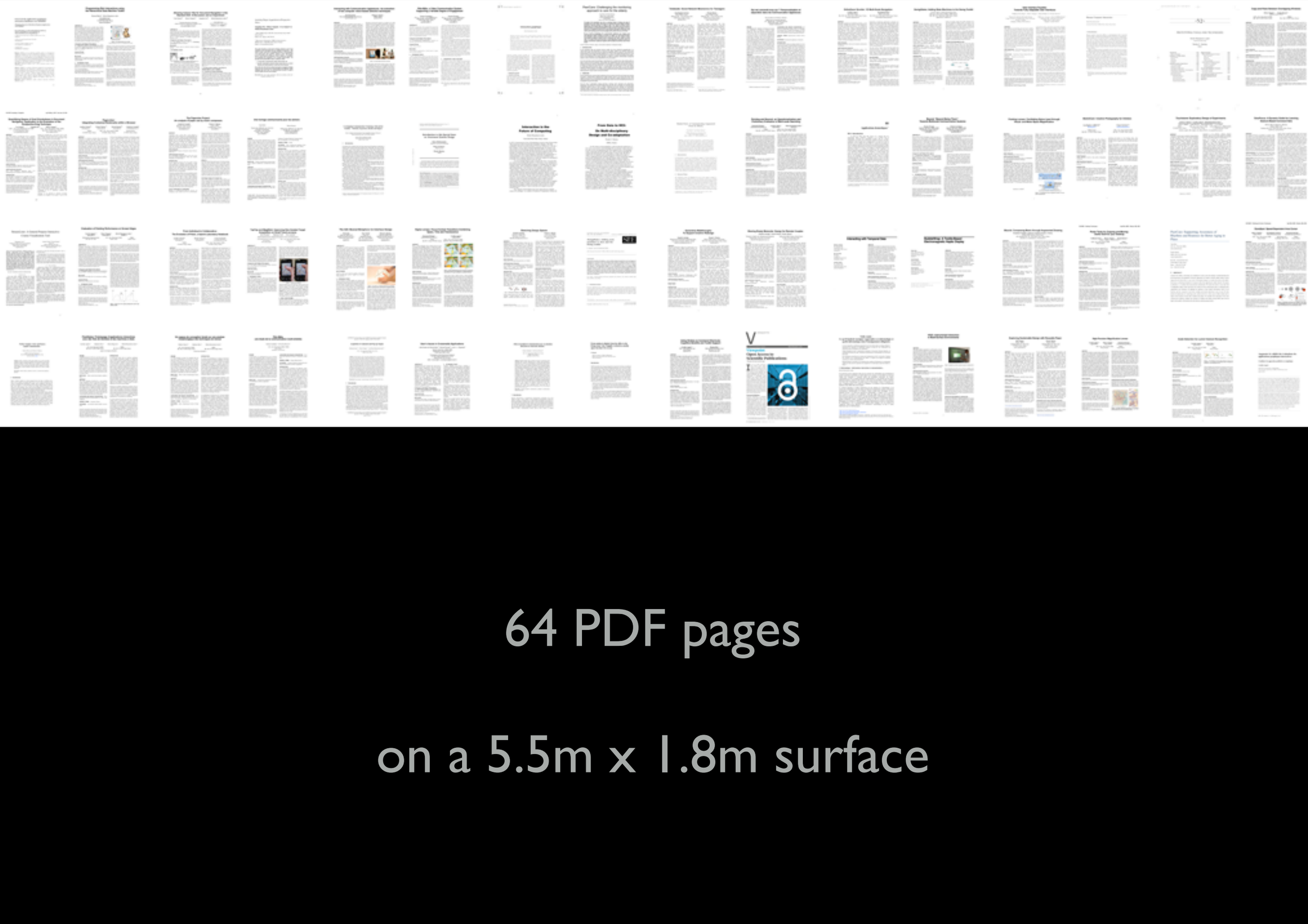
1280

DGP

6144

WILD

20480



64 PDF pages

on a 5.5m x 1.8m surface

DGP

6144

(c)

almost always achieved through a sin-
. We investigate how other dimensions,
slucence, can be used to achieve more
We present an extension to Carpen-
unifying presentation space accommo-
ensions. We define new lenses in that
lenses, and compare them to existing
iments based on a generic task: focus
w that one new lens, the SPEED-COUPLED
cantly outperforms all others.

(c)

**Figure 1. Various transitions betwe
tion causing occlusion, (b) distortin
ing translucence, (d) using a combi**

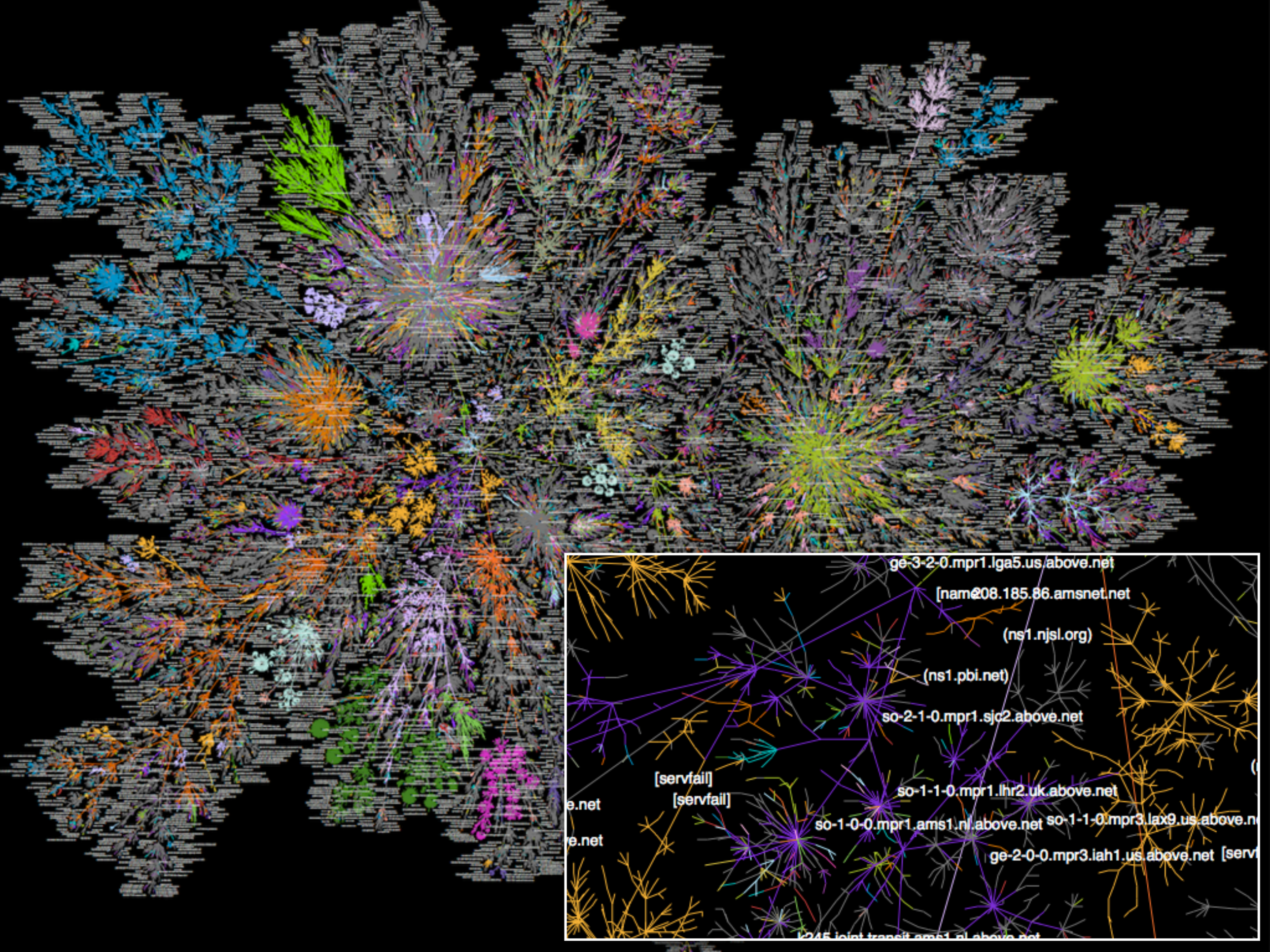
s, Focus + Context, Fisheye lenses,
targeting, Controlled experiment

Keywords

ms H.5 Information Interfaces and Pre-
Interfaces (H.1.2, I.3.6)

region of the context. While
are generally favored and hav
in some situations [16, 22, 2
show their limits: for instanc
densely populated region suc

WILD
20480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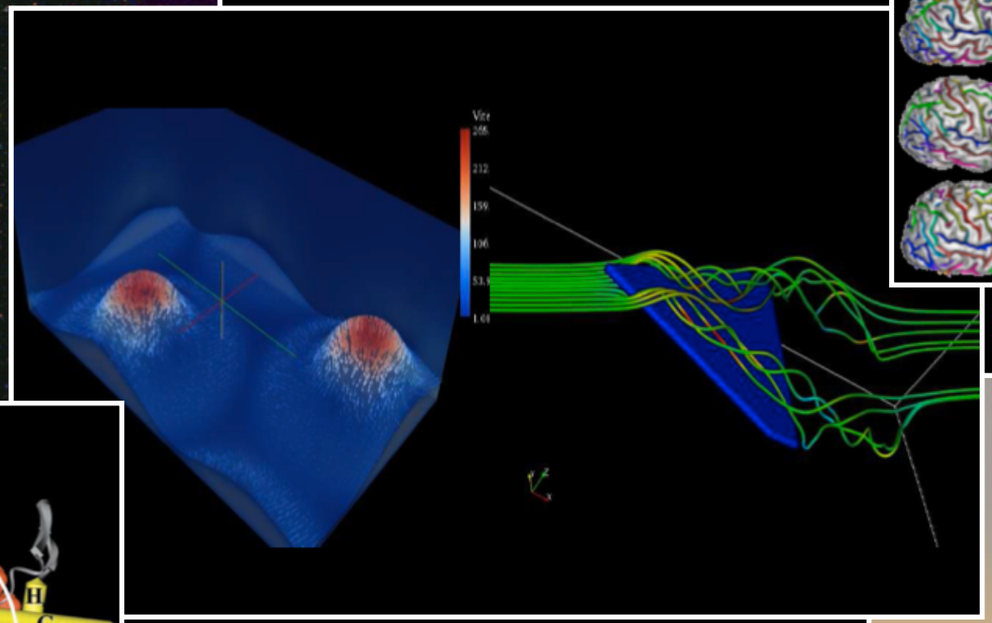
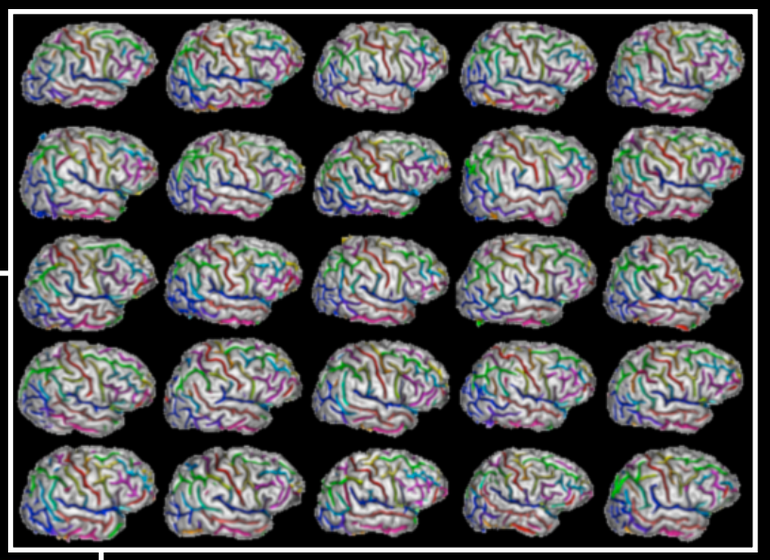
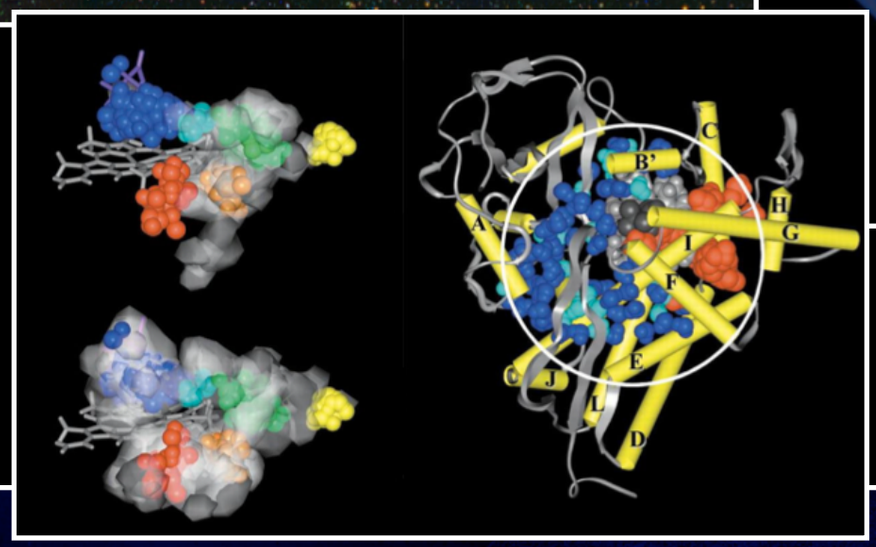
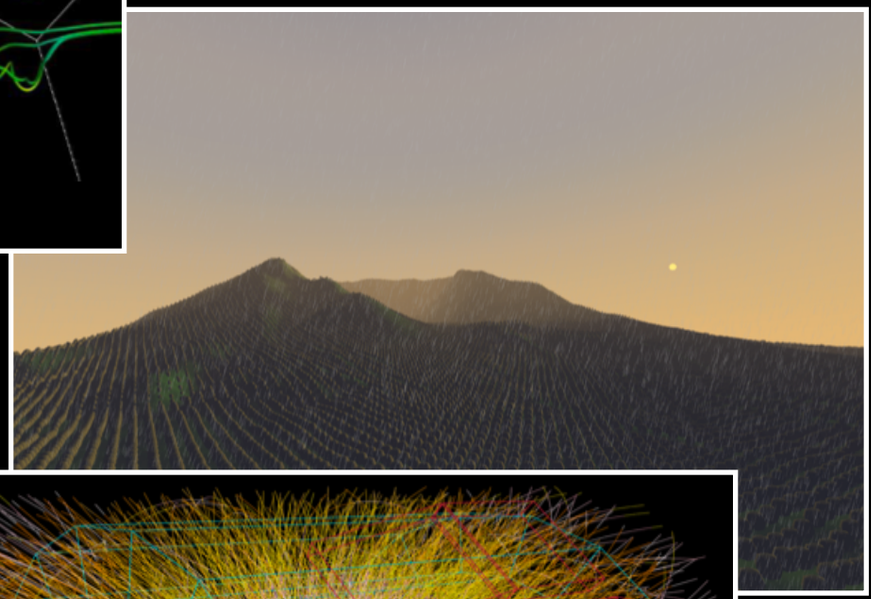
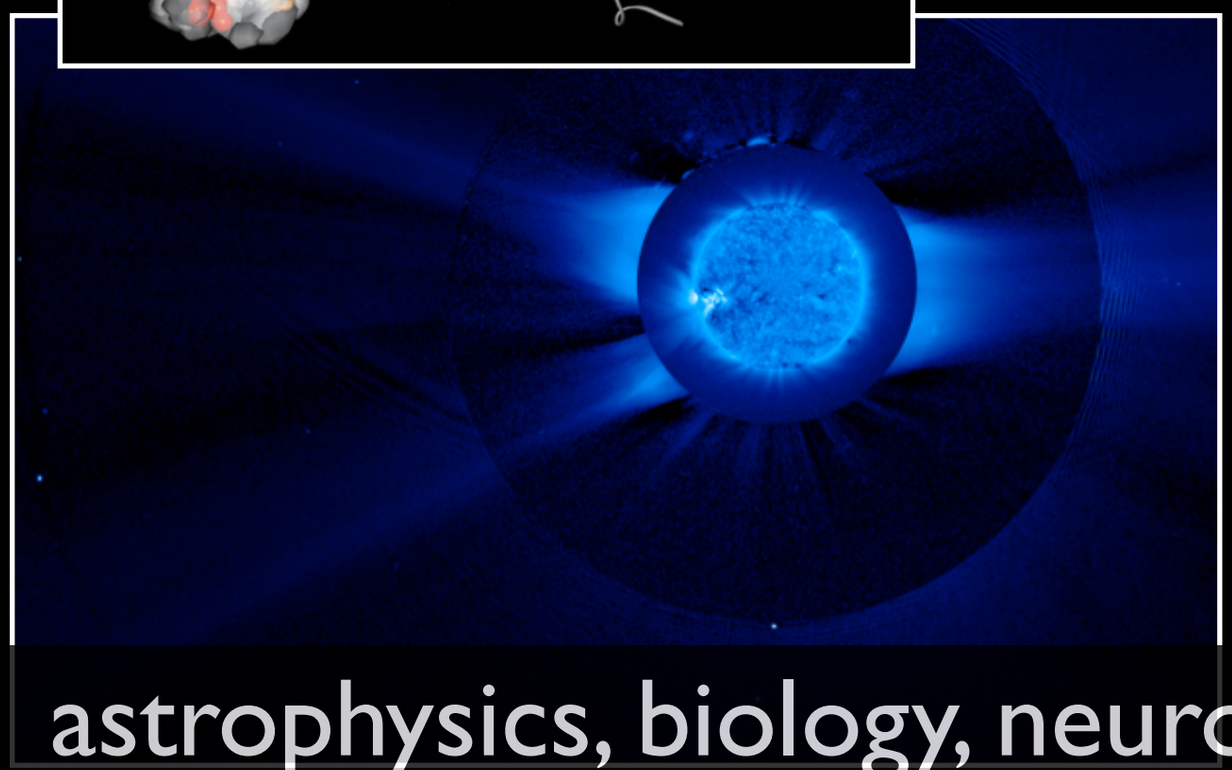
Slippy maps range from 17MPx17MP (16-level quadtrees) to 268MPx268MP (20 level quadtrees)

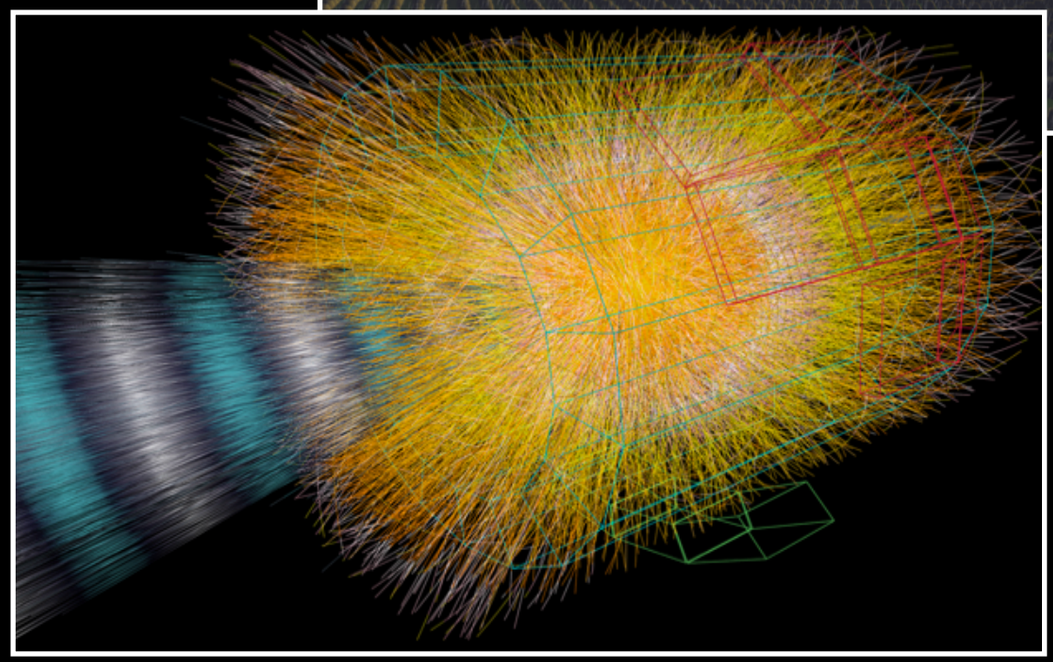




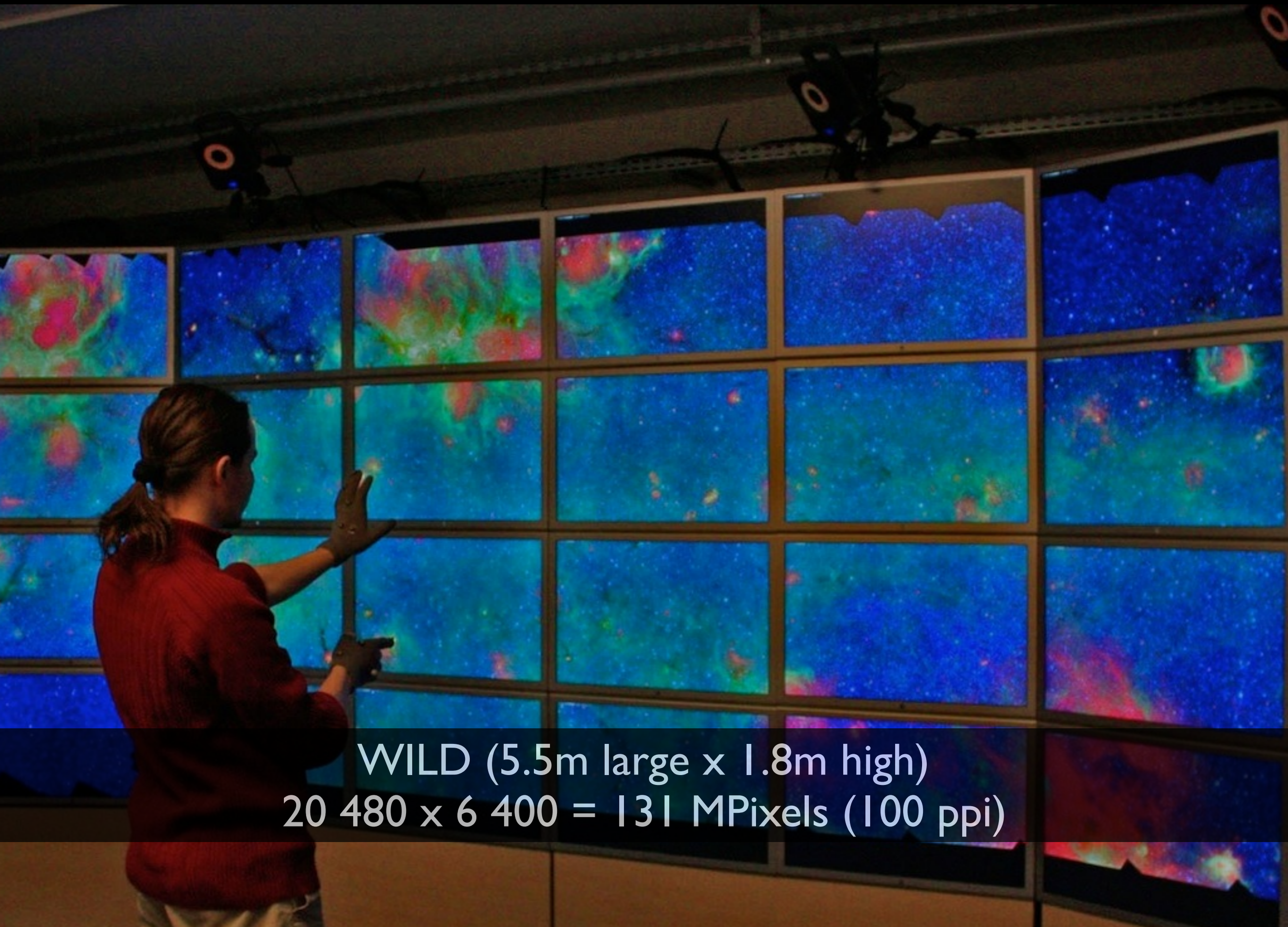








astrophysics, biology, neuroanatomy, particle physics, ...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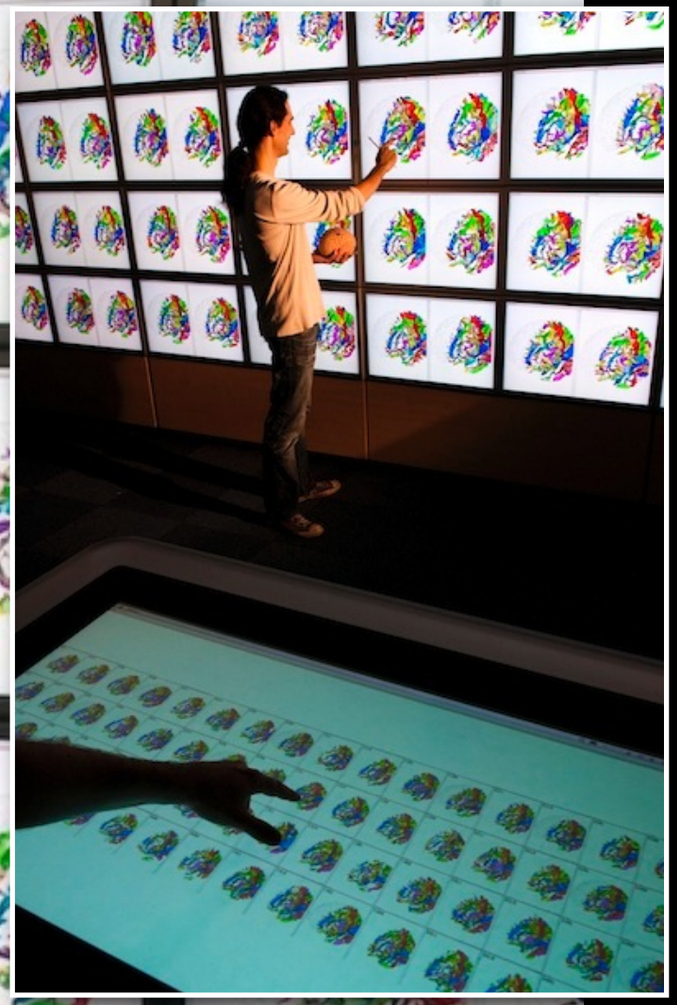
20 480 x 6 400 = 131 MPixels (100 ppi)

WILDER (5.9m large x 2m high)
14 400 x 4 800 = 69 MPixels (60 ppi)
Multi-touch

ANDES (4.6m large x 1,7m high)
11 520 x 4 320 = 50 MPixels (60 ppi)
Multi-touch

Real-time monitoring of geolocated data, smart cities projects…

Fire prevention & crisis management



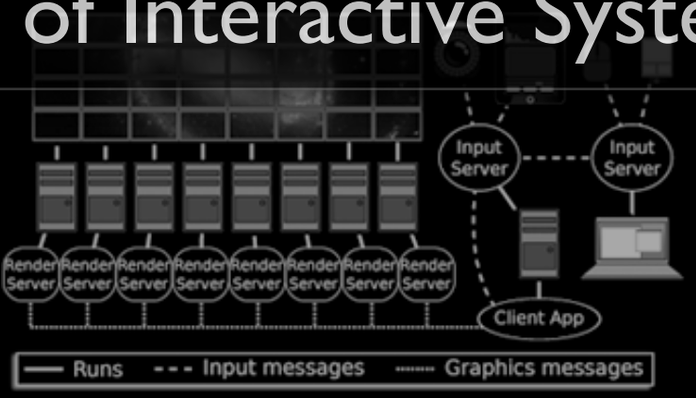
Neurospin - neuroanatomy

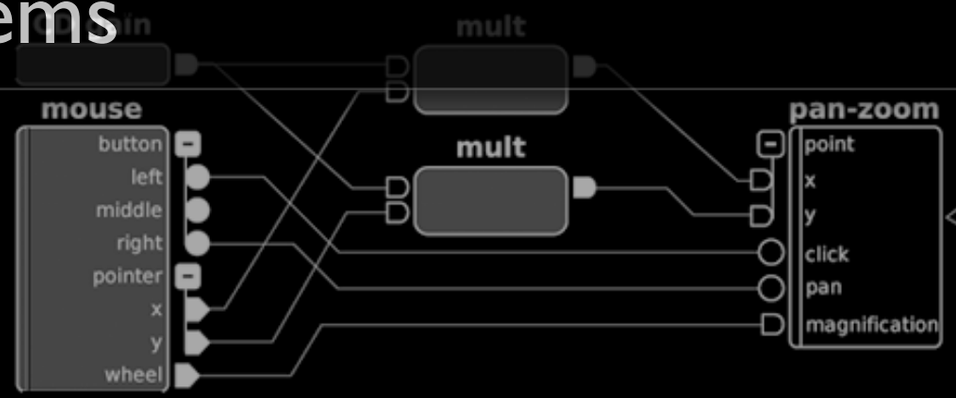
Effects of Display Size and Navigation Type on a Classification Task

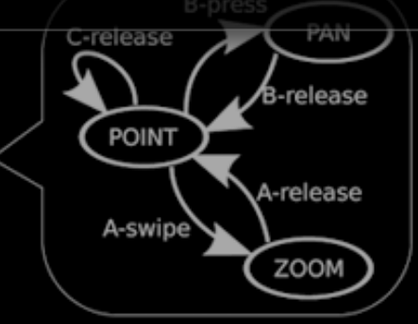
Liu, Chapuis, Lecolinet, Beaudouin-Lafon and Mackay - ACM CHI 2014

Interaction and Visualization Techniques

Engineering of Interactive Systems







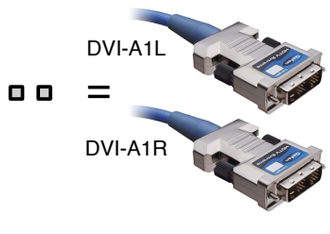
Specific Application Areas

ANDES

Gefen DVI fiber optics cables

A1L	A1R	B1L	B1R	C1L	C1R
A2L	A2R	B2L	B2R	C2L	C2R
A3L	A3R	B3L	B3R	C3L	C3R
A4L	A4R	B4L	B4R	C4L	C4R

2 x NVIDIA Quadro 2000



DVI or DP

MSTR

Dell R5500, Dual Xeon E5606, 12GB RAM, 256GB SSD + 512GB HDD@7200RPM

Gb Eth

Gb Eth

Dell PowerConnect 5524, 24 GbE ports

A1 B1 C1

A2 B2 C2

A3 B3 C3

A4 B4 C4

12 x Dell R5500, Dual Xeon E5606, 12GB RAM, 256GB SSD + 512GB HDD@7200RPM

WILD (Paris, France)

16 nodes + 2 masters
- 8x4 tiles (2560x1600)
- 36 NVidia GeForce GT8800
- Mac OS X & Linux Ubuntu
- 144 Intel Xeon cores
- 192 GB RAM
- HDD storage (10TB)

1Gb eth network
Vicon motion tracker (10 cameras)
Fat bezels

ANDES (Santiago de Chile)

12 nodes + 1 master
- 6x4 tiles (1920x1080)
- 24 NVidia Quadro 2000
- Linux Fedora 19
- 144 Intel Xeon cores
- 156 GB RAM
- SSD+HDD storage (10TB)

1 Gb eth network
No motion tracking
Narrower bezels
ZaagTech multi-touch frame

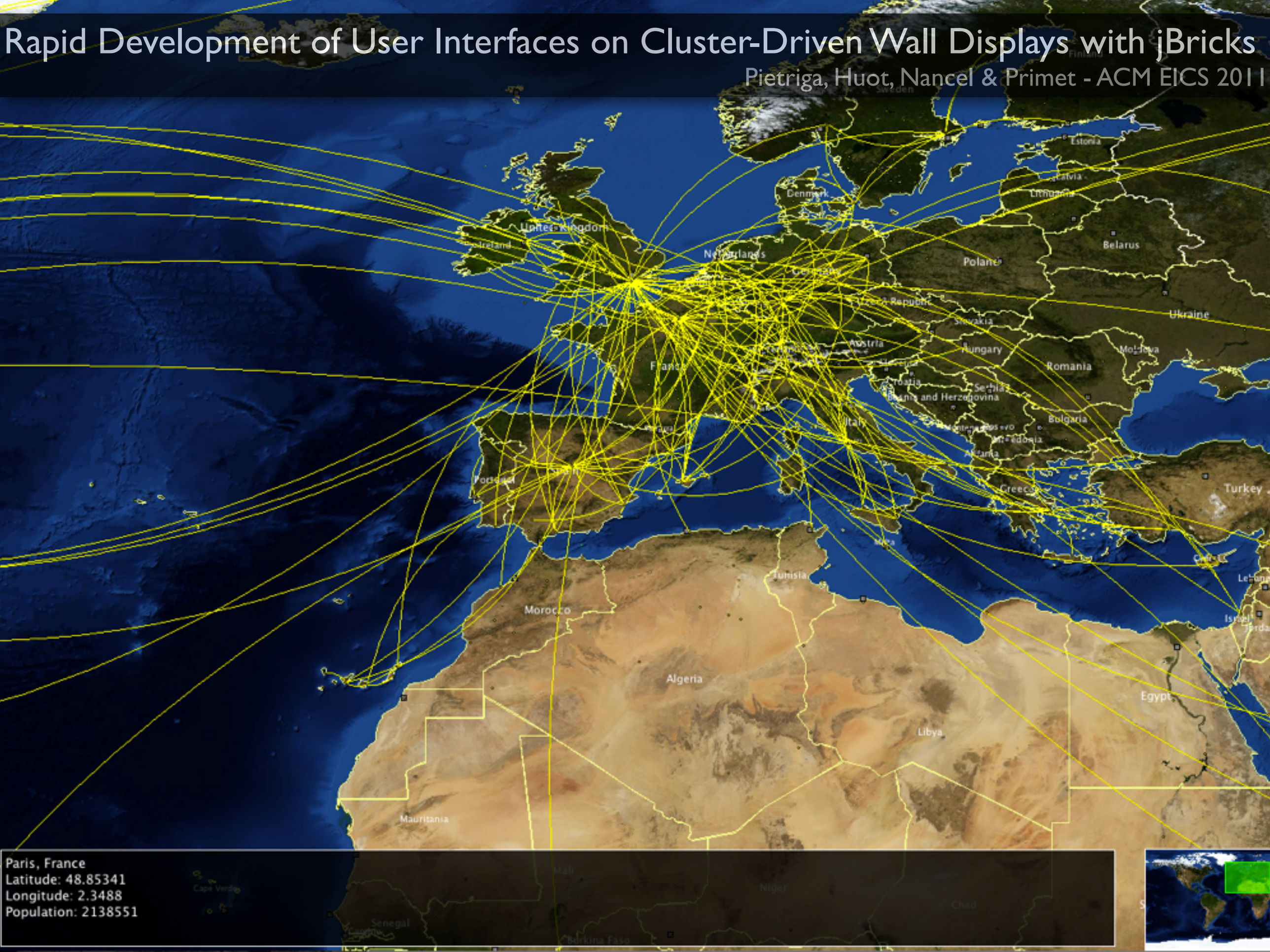
WILDER (Paris, France)

10 nodes + 2 masters
- 15x5 tiles (960x960)
- 10 NVidia K5000
- Linux Ubuntu 2014
- 40 Intel Xeon cores
- ??? GB RAM
- SSD+HDD storage

1Gb eth network
Vicon motion tracker (6 cameras)
Very narrow bezels
PQLabs multi-touch frame

Rapid Development of User Interfaces on Cluster-Driven Wall Displays with jBricks

Pietriga, Huot, Nancel & Primet - ACM EICS 2011



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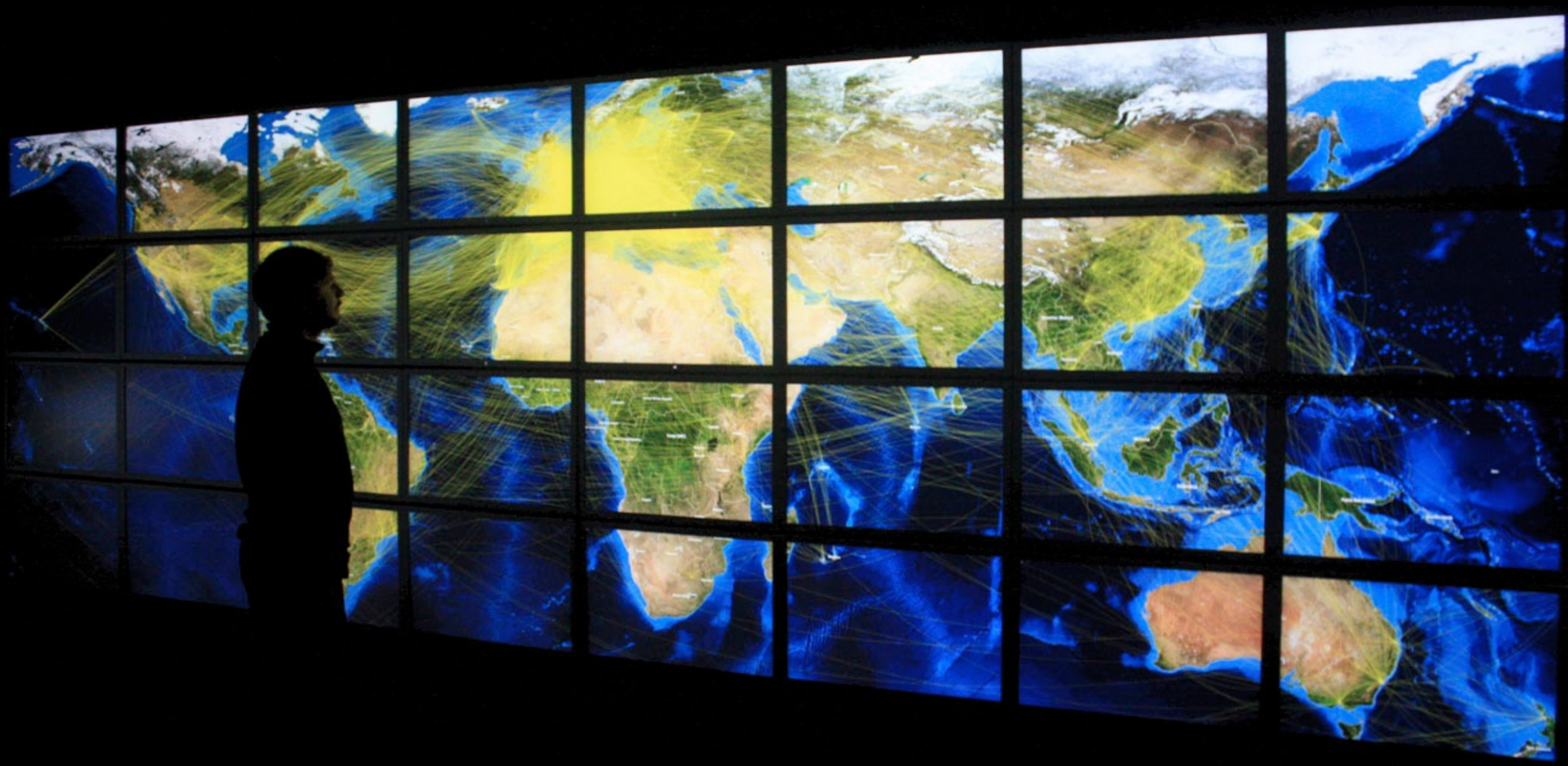
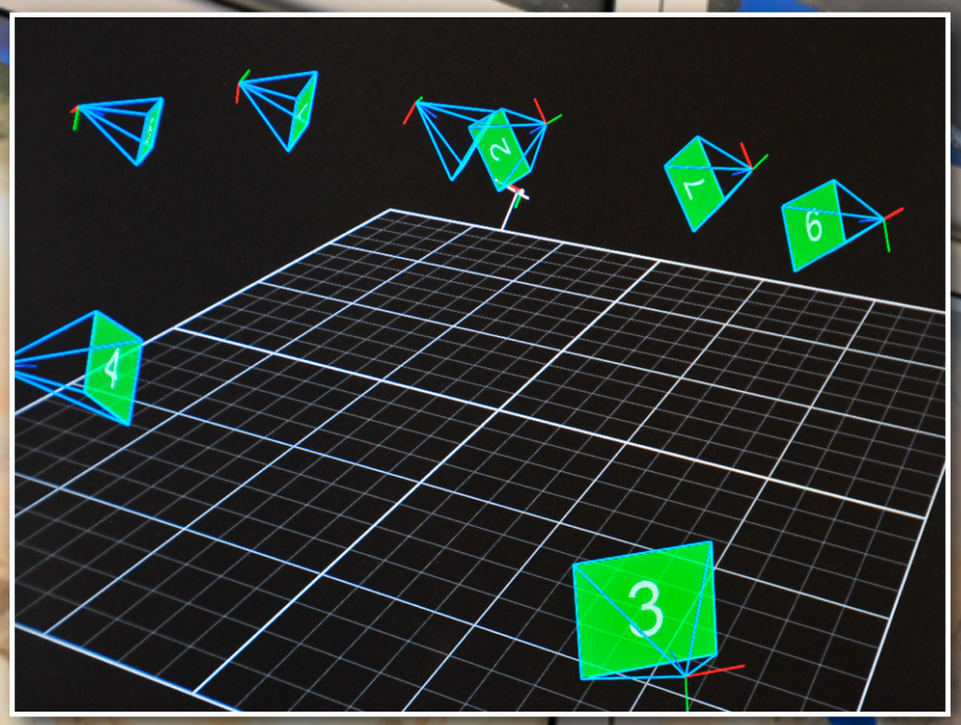


Vicon cameras

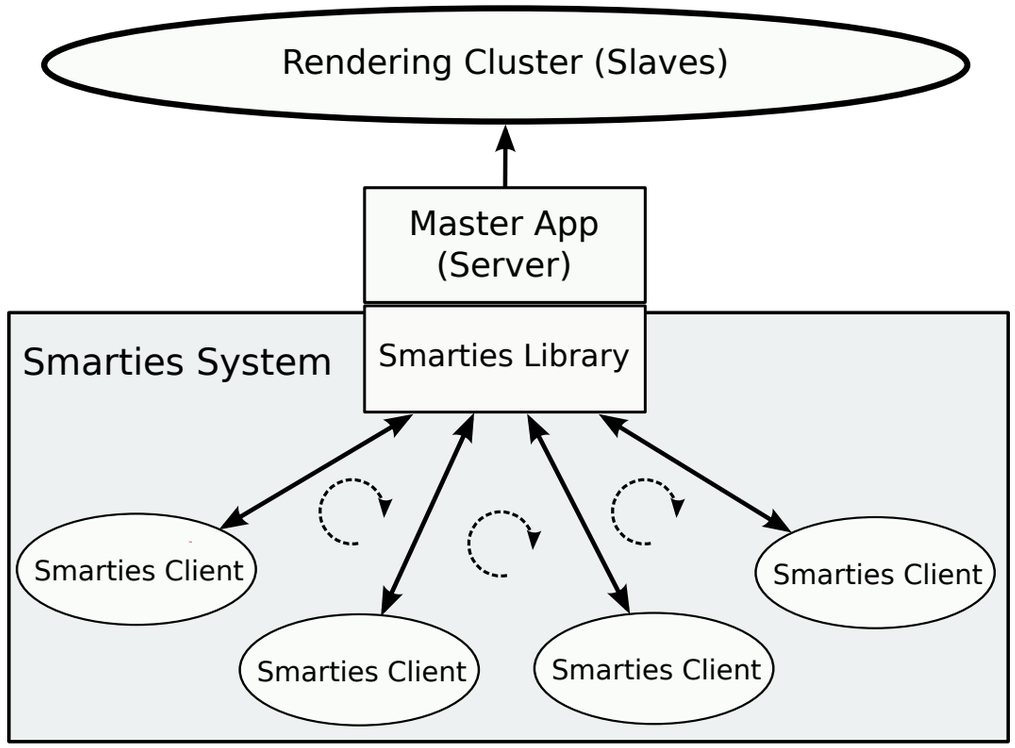
- Near IR
- 200 Hz
- Sub-millimeter accuracy

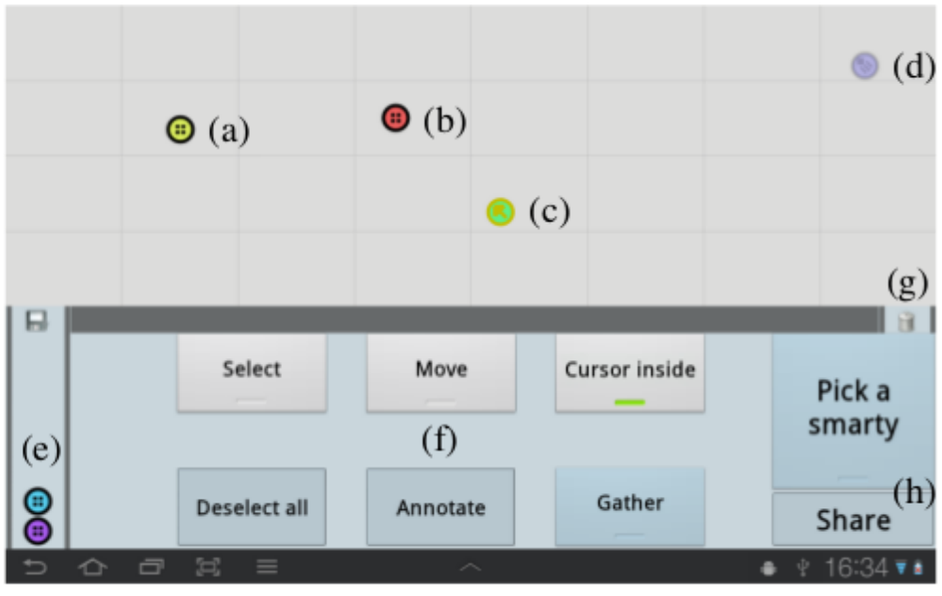


input framework for wall display

The Smarties system:

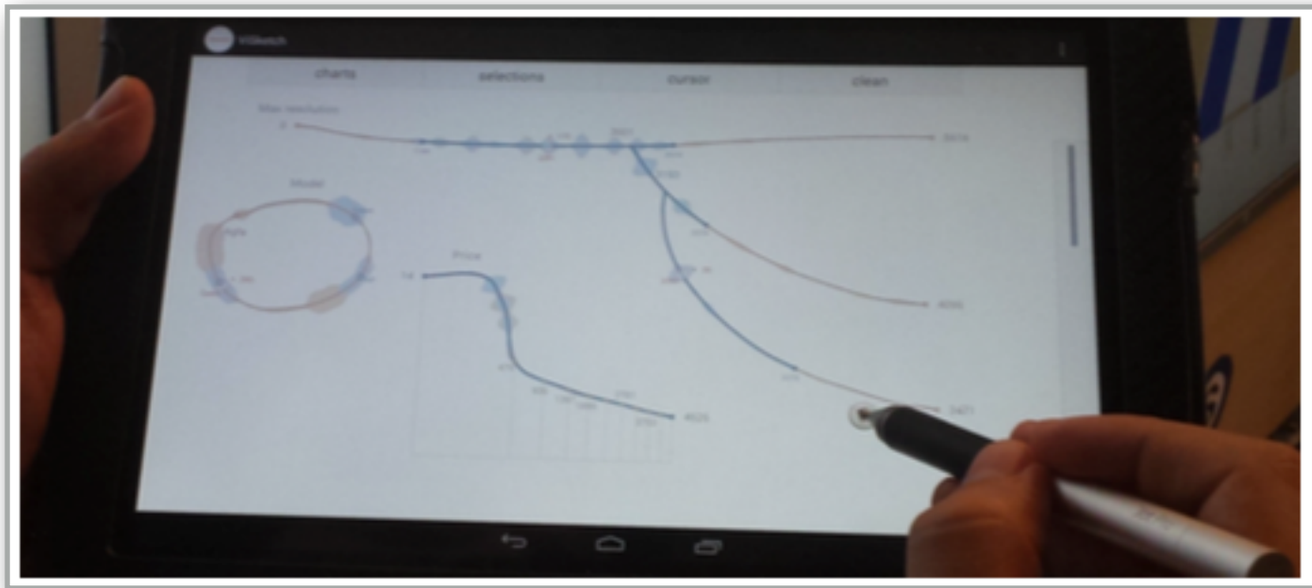
- an input interface on touch mobile devices
- a protocol defining the communication between these interfaces and wall applications
- a library that implements the protocol at the wall application side

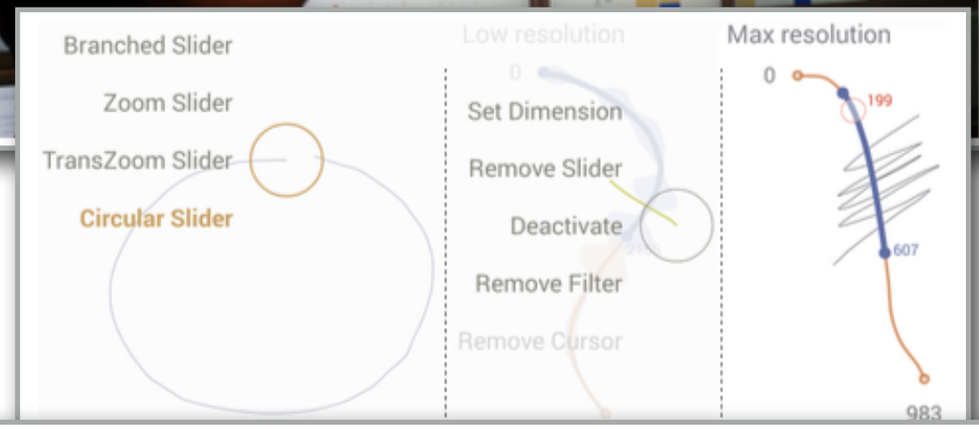


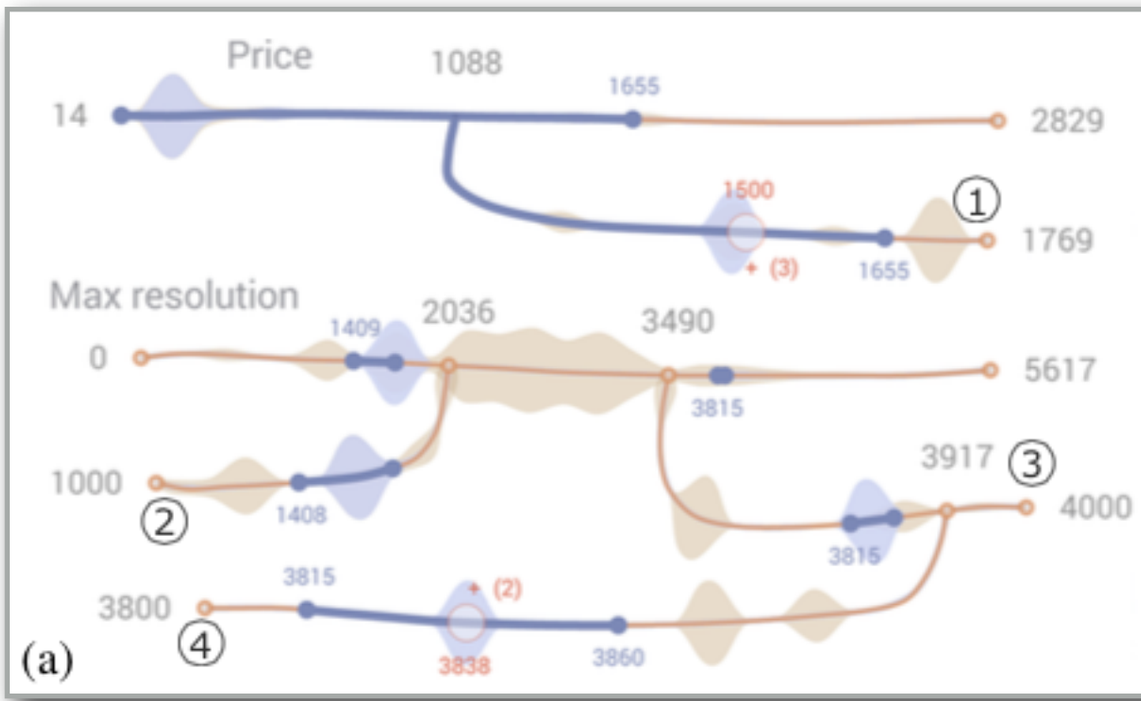


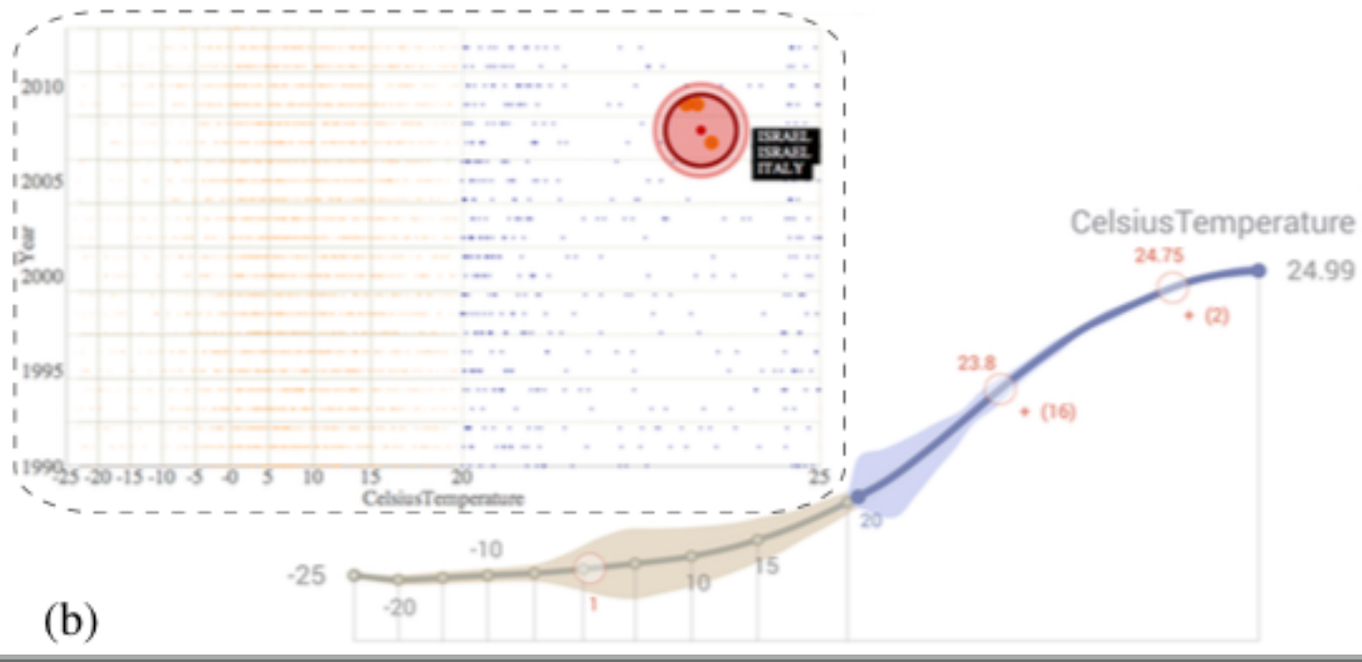
SketchSliders: Sketching Widgets for Visual Exploration on Wall Displays

Tsandilas, Bezerianos & Jacob - ACM CHI 2015









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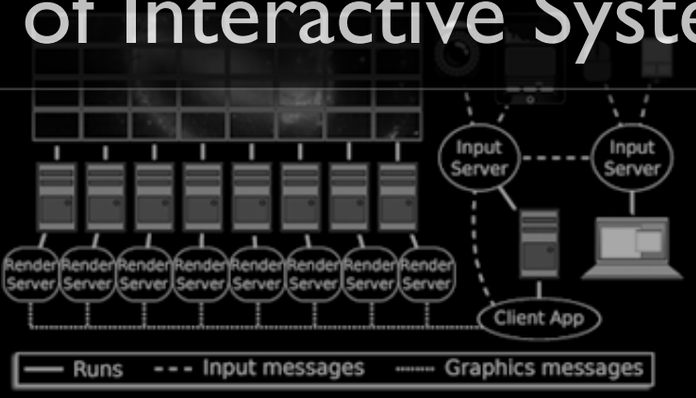
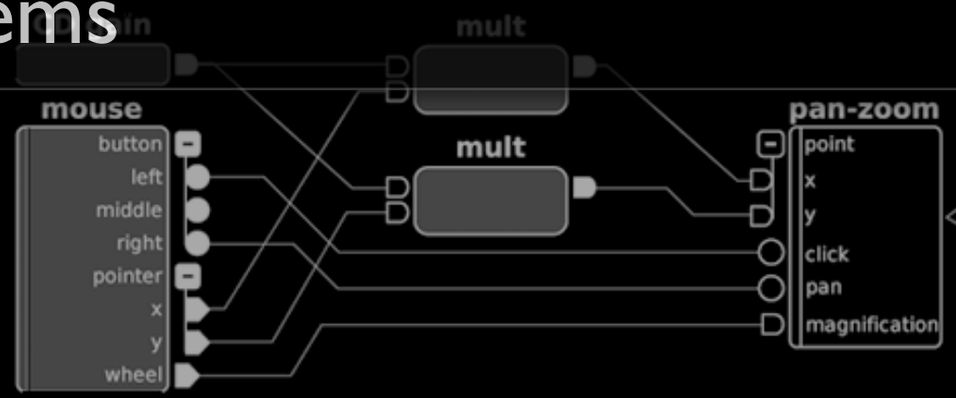
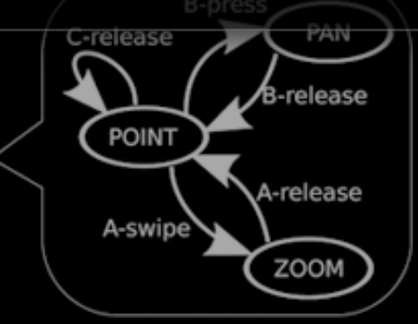
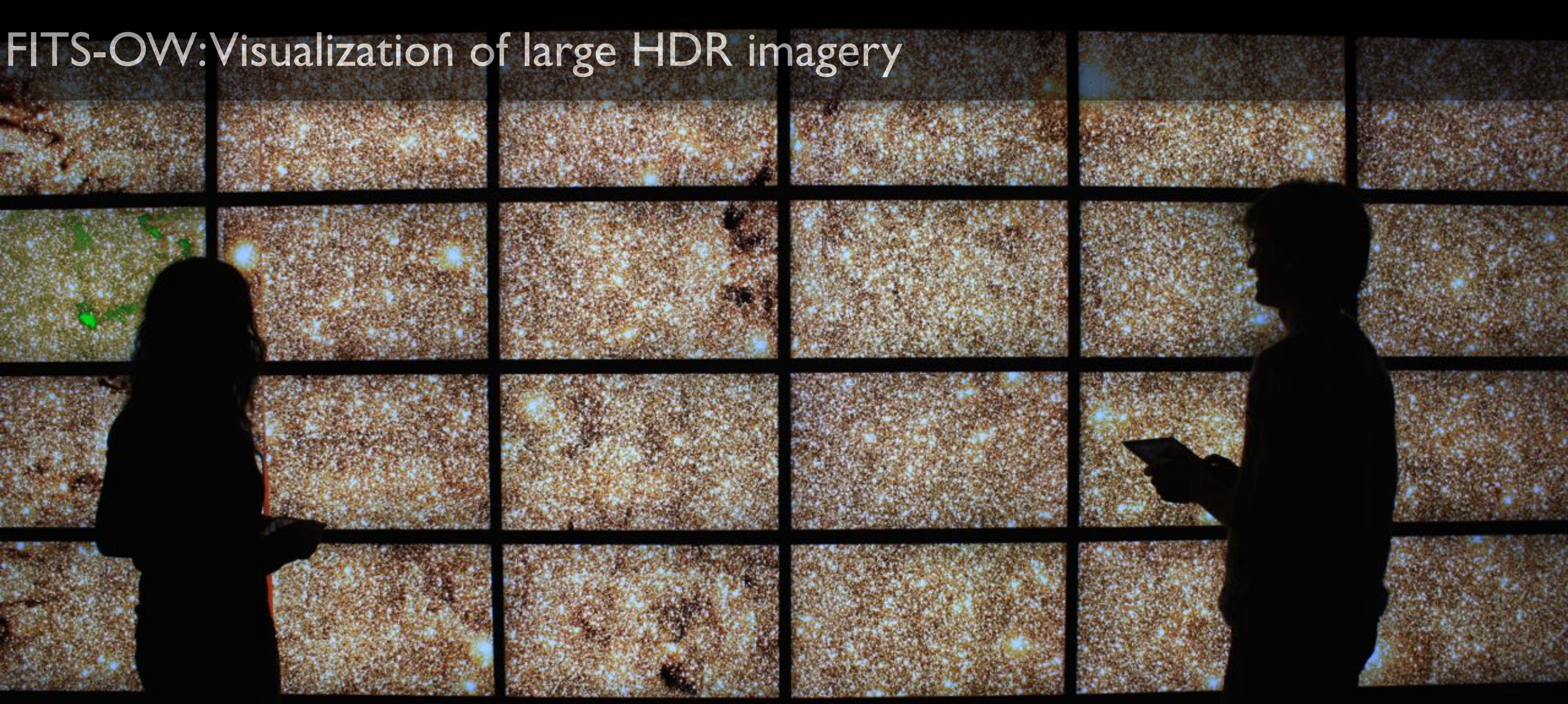






Specific Application Areas

FITS-OW: Visualization of large HDR imagery



Data:

- Distributing multi-scale HDR images
- Handling collections of images
- Dynamic color lookup table/scaling algorithm
- Handling heterogeneous data sources (SIMBAD queries, PDF documents, …)

Interaction:

- Gestures, multiple input devices (handheld devices, RT motion tracking, …)
- View management
- Collaborative work

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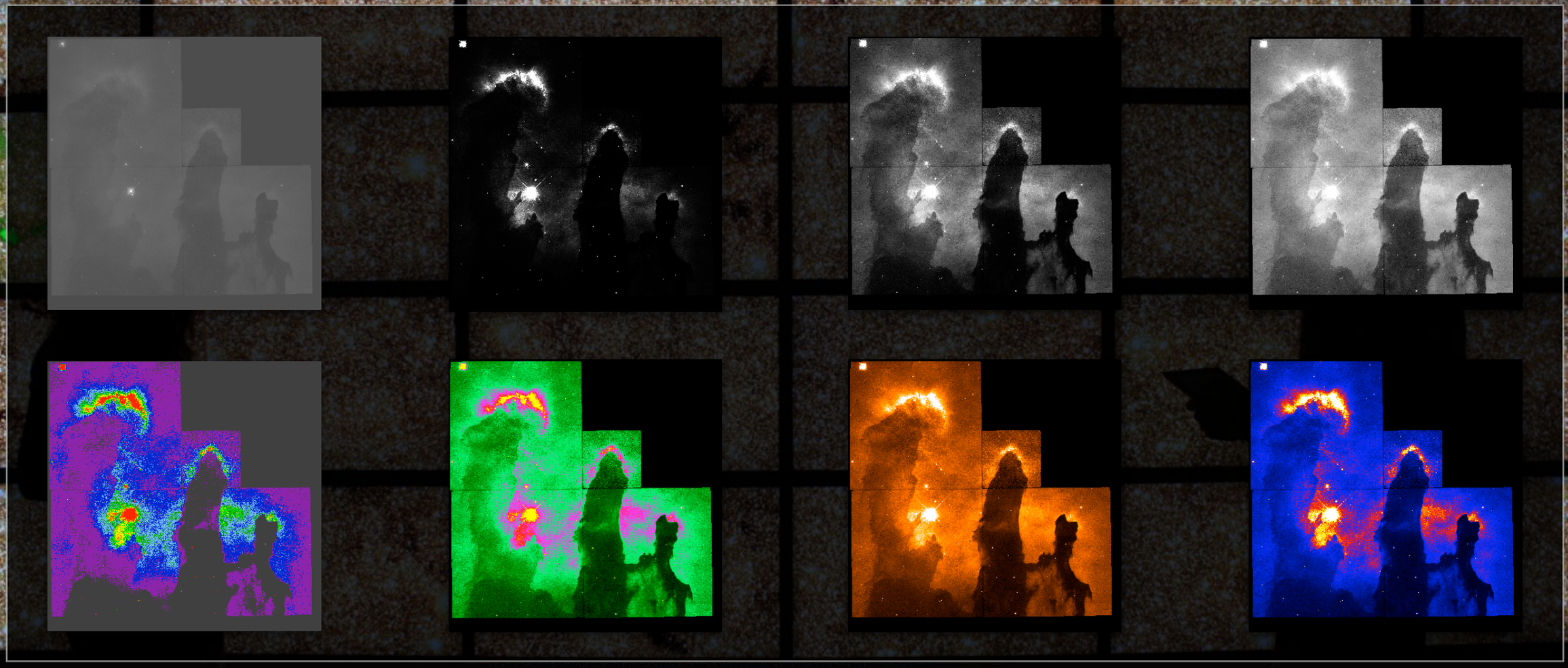

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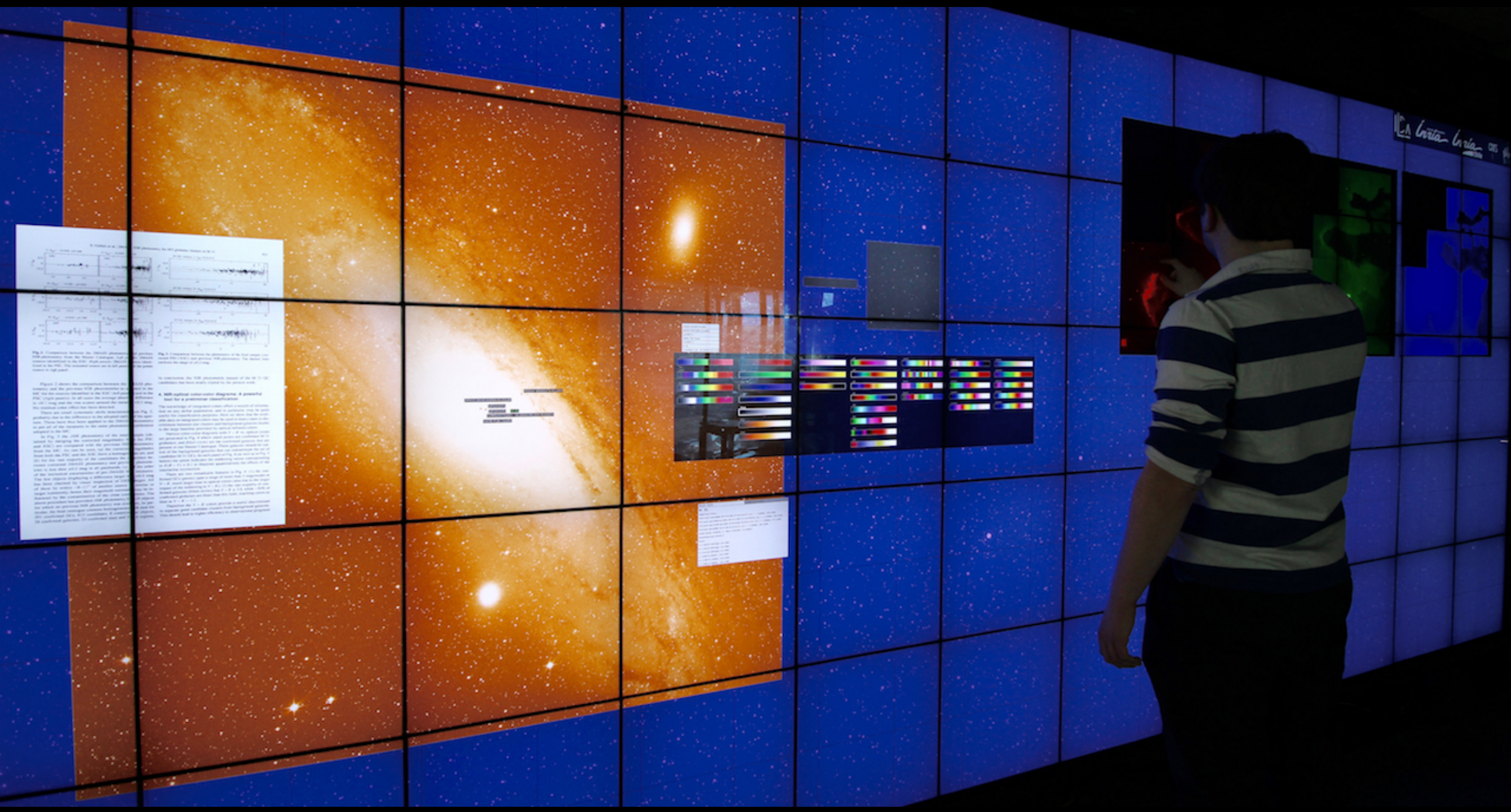
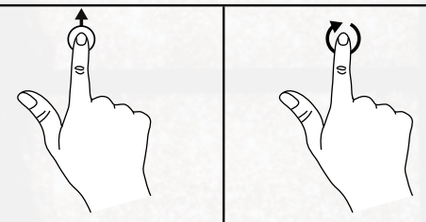
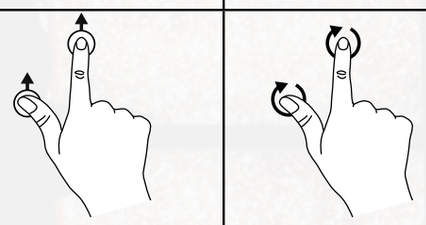
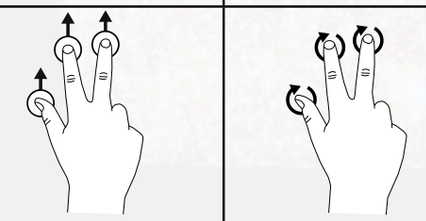
Exploratory Visualization of Astronomical Data on Ultra-high-resolution Wall Displays

E. Pietriga, F. del Campo, A. Ibsen, R. Primet, C. Appert, O. Chapuis, M. Hempel, R. Muñoz, S. Eyheramendy Duerr, A. Jordan, H. Dole, *Astronomical Telescopes and Instrumentation*, SPIE, 2016 (invited paper)



Multi-touch gestures for discrete and continuous control

Olafsdottir and Appert - ACM AVI 2014

Constraint	FREE				ANCHORED			
Reference	EXTERNAL		INTERNAL		EXTERNAL		INTERNAL	
Shape	LINEAR	CIRCULAR	LINEAR	CIRCULAR	LINEAR	CIRCULAR	LINEAR	CIRCULAR
1 CP								
2 CP								
3 CP								
4 CP	...	...	...	...				
5 CP	...	...	...	...				

Da

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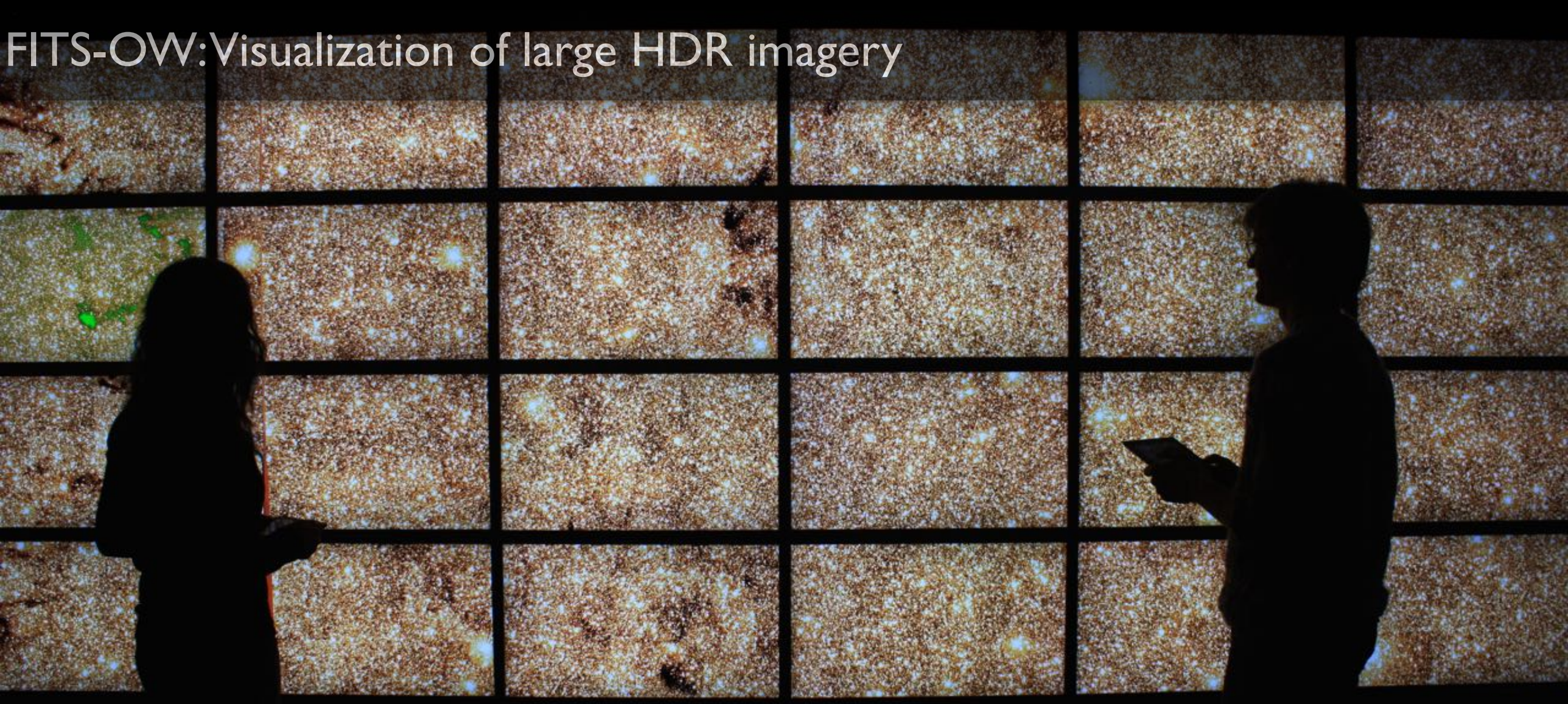

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