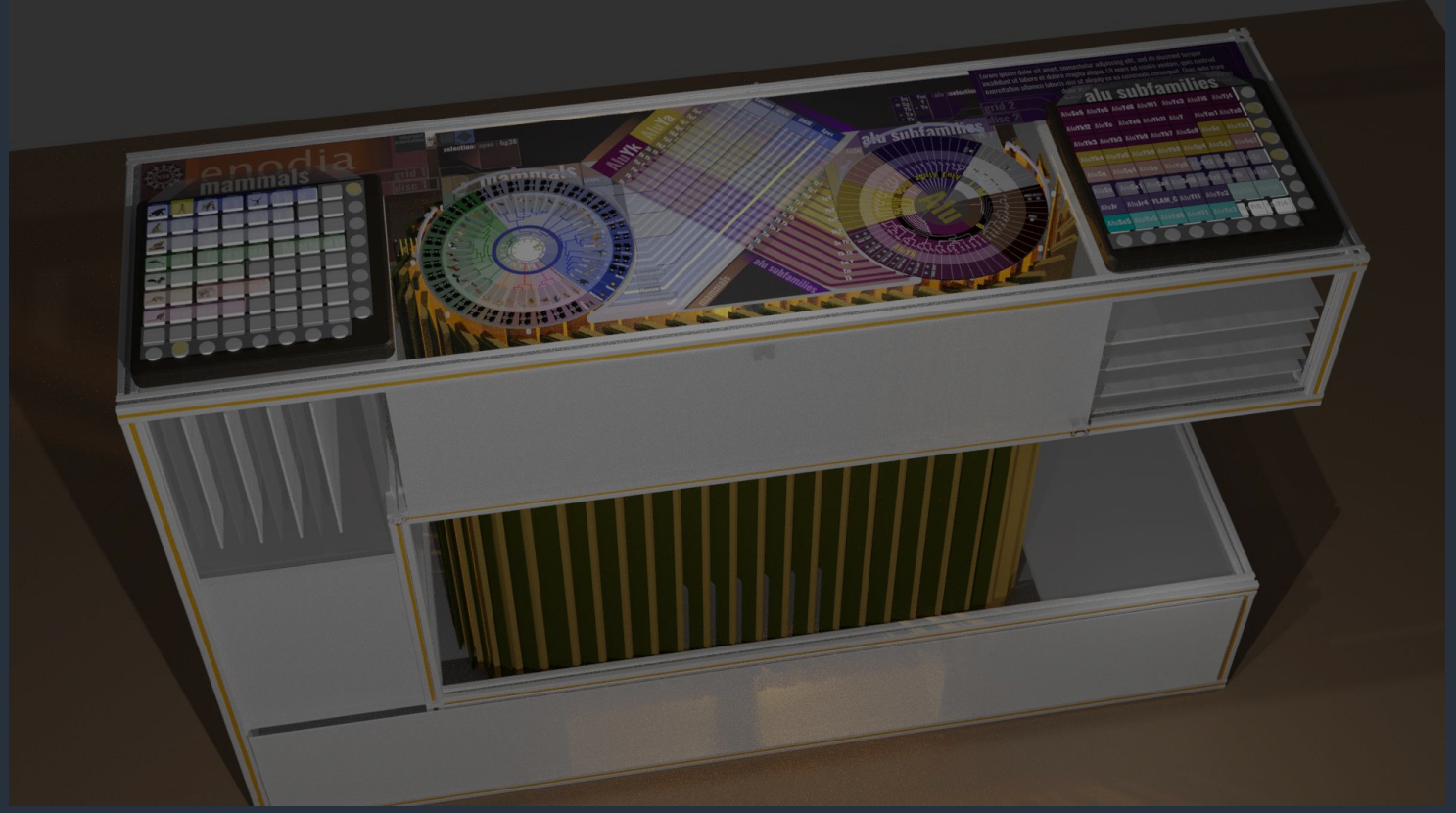

Prospects interweaving ATE, AI, VR, tangibles, and stargates

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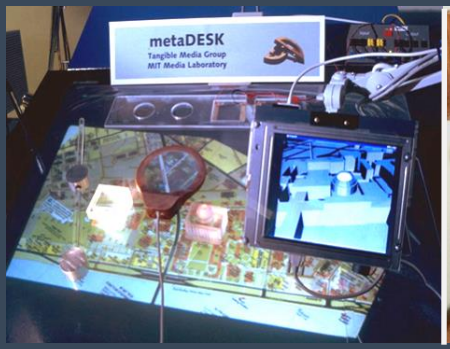
Context on presence today

Chair, Human-Centered Computing (HCC), Clemson University;
Representing School of Computing, CECAS, Clemson University

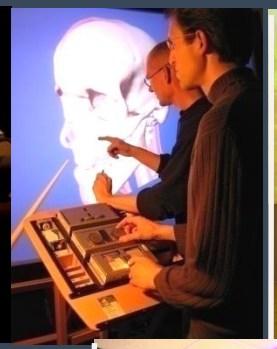
Also of relevance:

Two most formative classes: @ San Ramon Community College, UC Berkeley Extension (Graphic Design; basis for 1300+ citation patent; conditional admittance for MIT); &
"How to Make (Almost) Anything", 1996, MIT (~shop; TA, 1997-02)

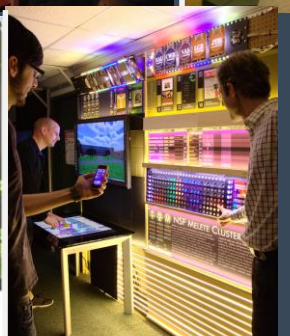
Examples of Ullmer + group work [mit · sony · zib · lsu · clemson]



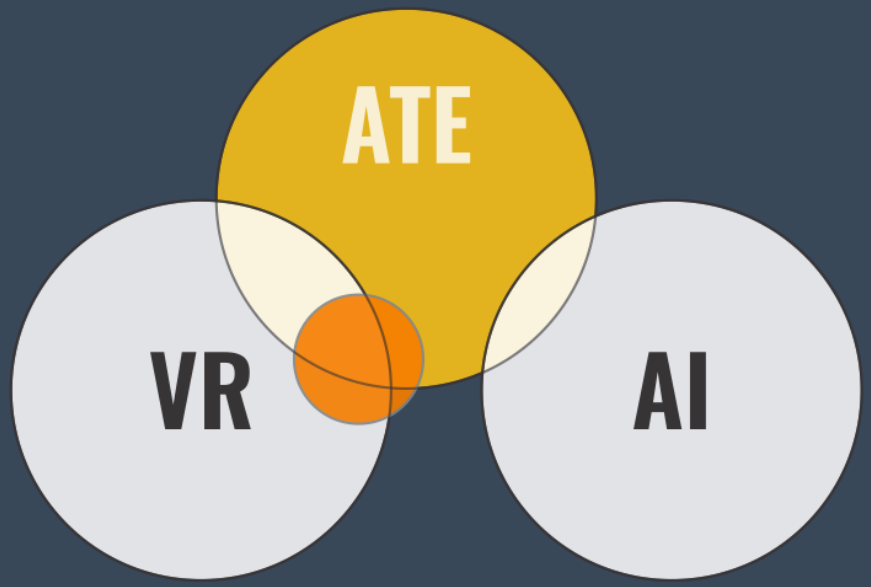








Prospects interweaving ATE, AI, VR, tangibles, and stargates



stargates

tangibles

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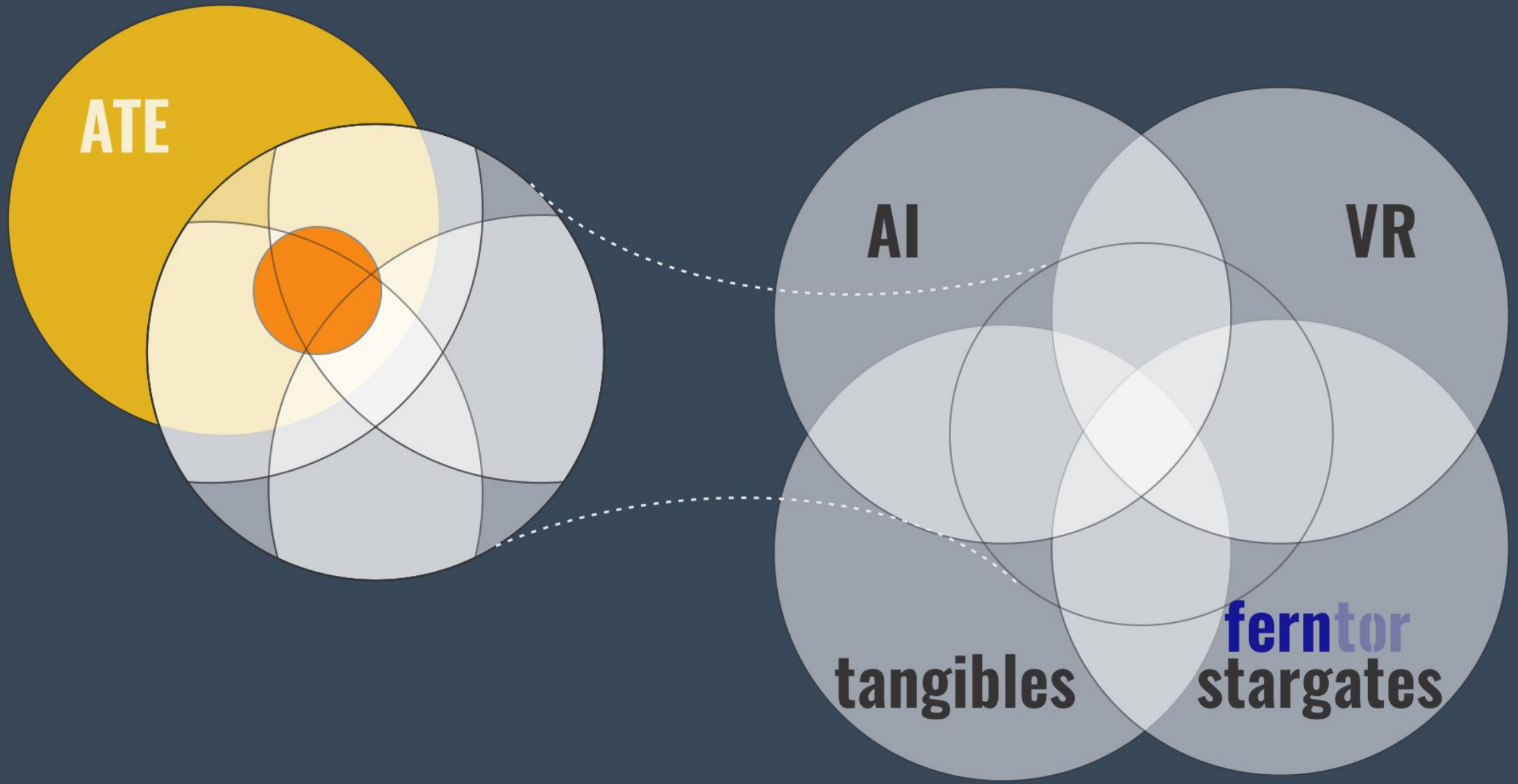
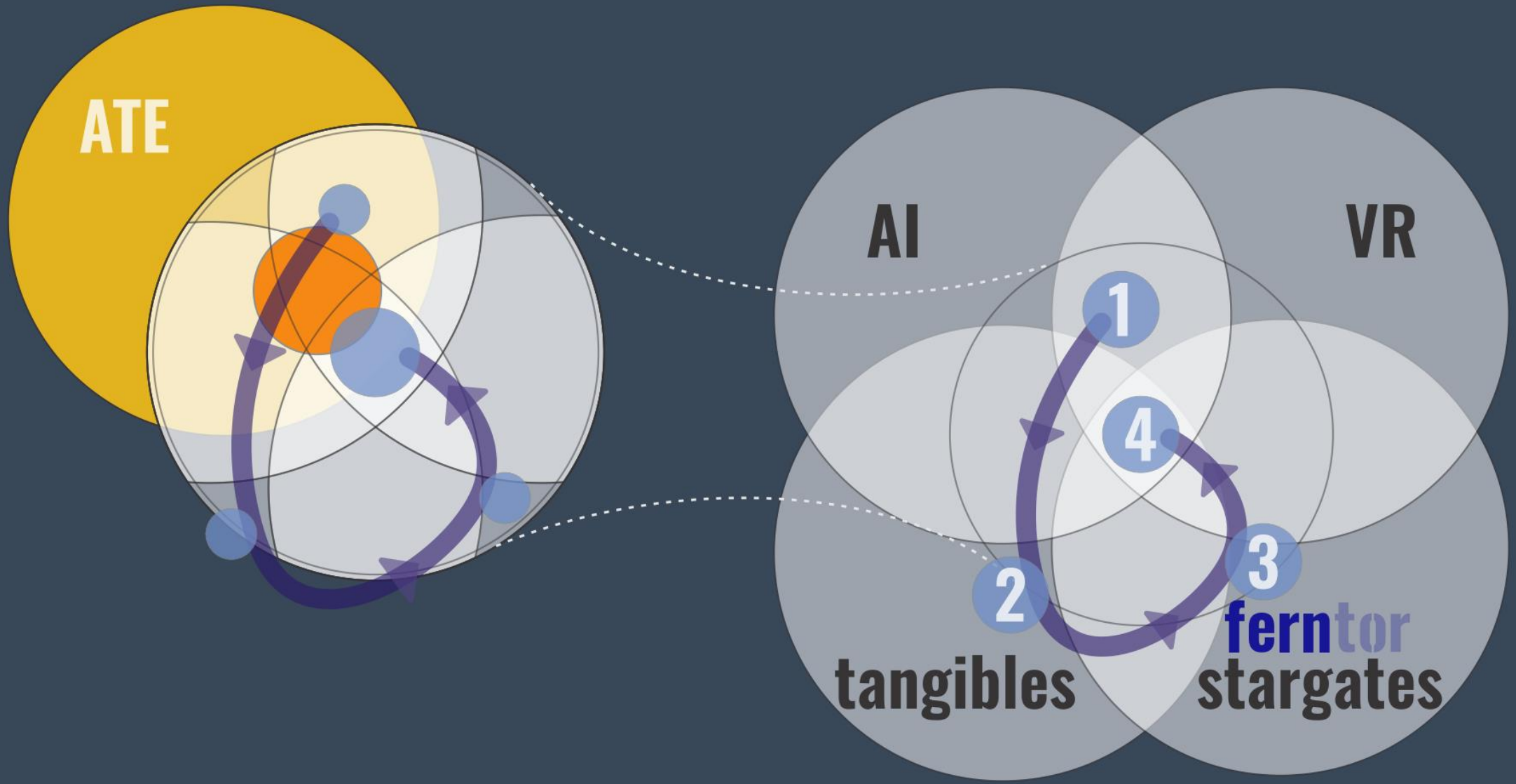
Title terms: another perspective



Title terms: another perspective



Clemson : Bertrand + VEG factory VR + AI example

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Clemson : Babu + VEG hospital VR + AI example

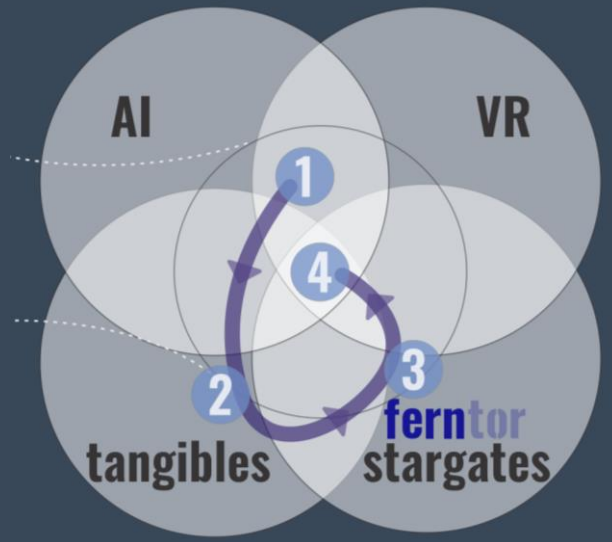
Diffusion of AI into full-spectrum research

CS	HCC	VC
Amy Apon	Sabarish Babu	Daljit Singh Dhillon
Long Cheng	Julian Brinkley	David Donar
Brian C. Dean	Kelly Caine	Andrew T. Duchowski
Rong Ge	James P. Clements	Federico Iuricich
Wayne Goddard	Guo Freeman	Sophie Joerg
Sandra M. Hedetniemi	Larry F. Hodges	Ioannis Karamouzas
Alex Herzog	Bart Knijnenburg	Insun Kwon
Hongxin Hu	Eileen Kraemer	Eric Patterson
Nina Hubig	Nathan McNeese	Jerry Tessendorf
Shuangshuang Jin	Andrew Robb	J. Mike Westall
Kai Liu	Brygg Ullmer	Victor Zordan
Feng Luo		
Jim Martin		
Paige Rodeghero		
Ilya Safro		
Murali Sitaraman		
Mark Smotherman		
Jacob Sorber		
Pradip Srimani		
James Wang		

college	fellow	project
AAH	7	1
Business	6	1
BSHS	2	8
CECAS	3	7
ED	1	2
Science	1	0

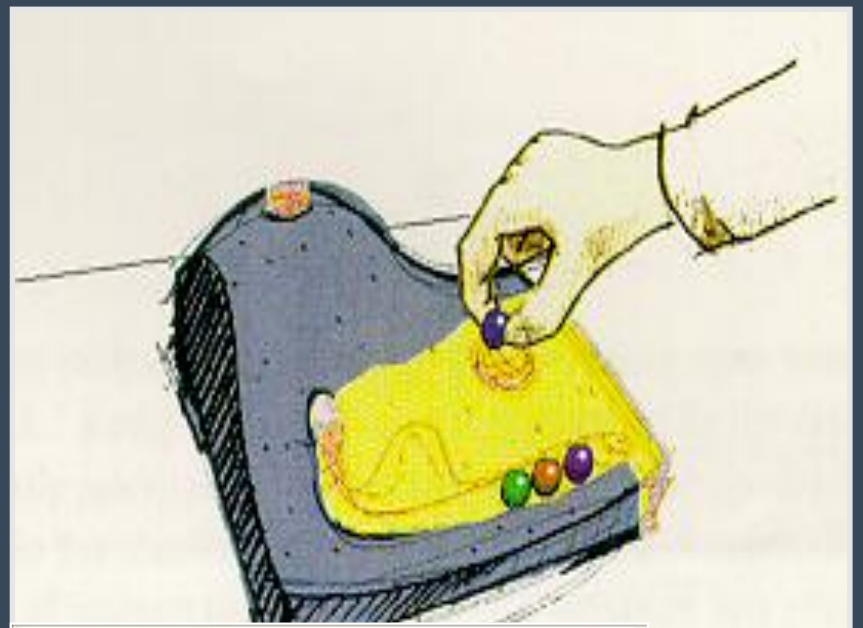
Identify power transmission, manufacturing anomalies; driverless vehicles for visually, cognitively impaired; predict improved crops; model topics across millions of documents; identify patiences with epilepsy; predict changes in social networks; synthesize hand animation; robot motion planning; AI for eSports; recommender systems; …

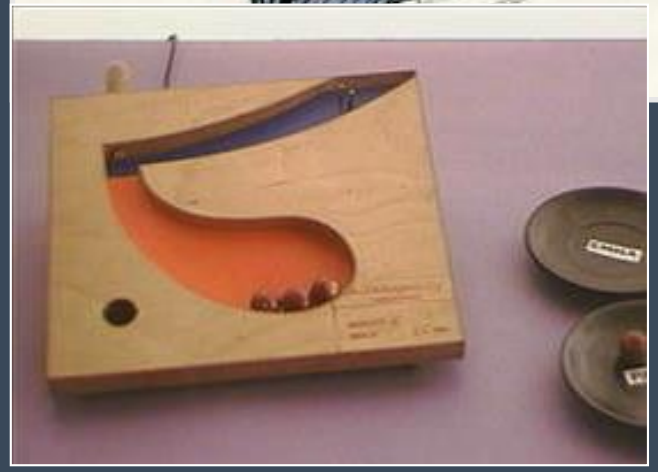
Tangibles

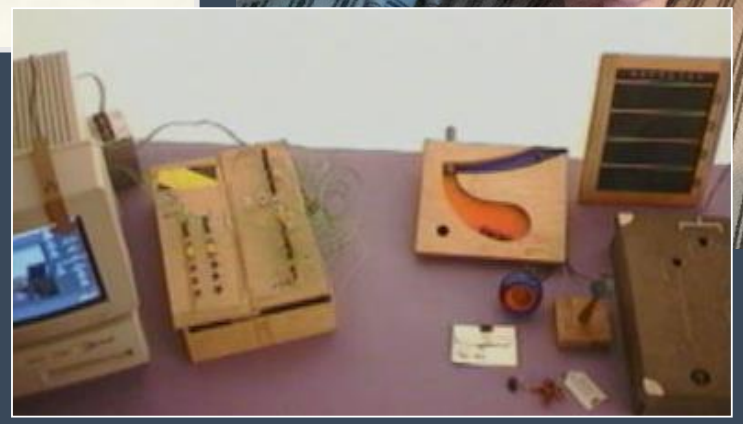


Tangibles : yesterday and today

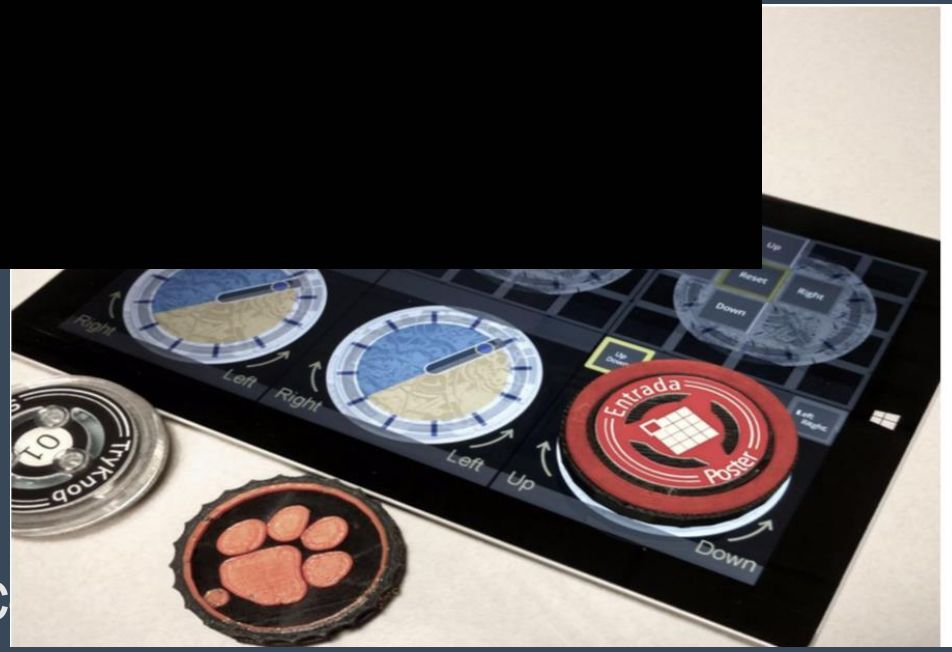
Bishop (1992, RCA)

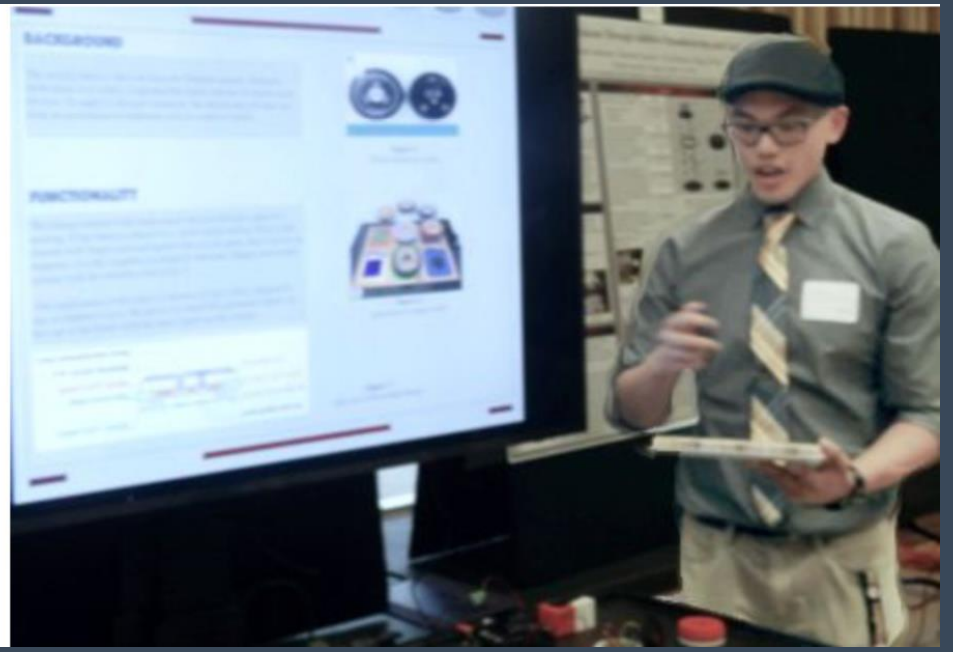


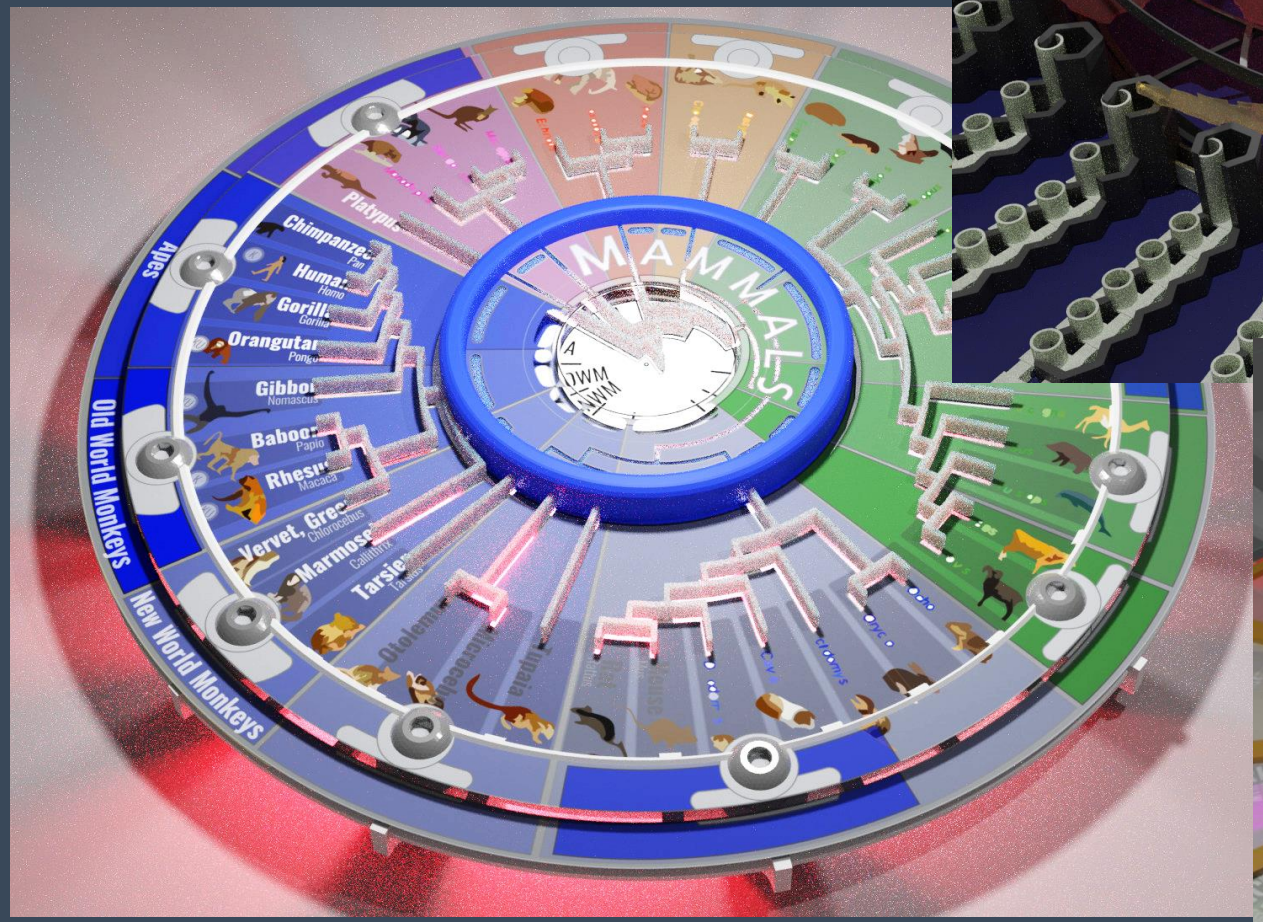


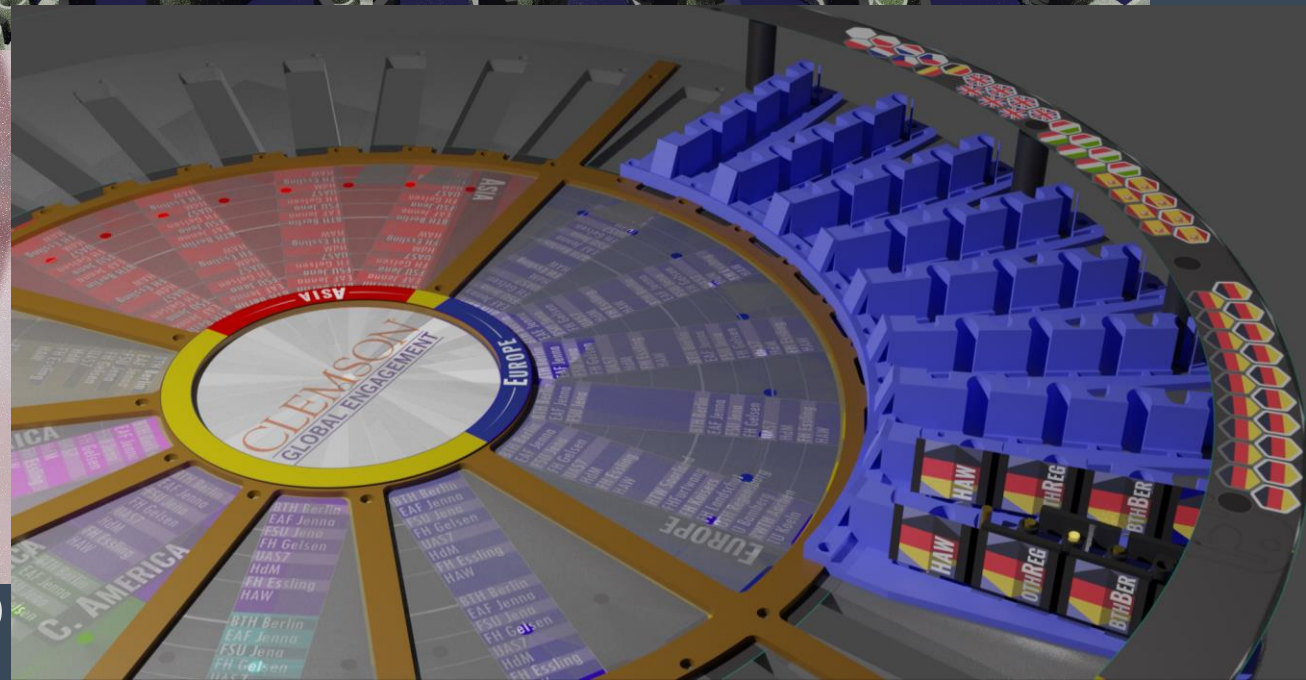


tangible query interfaces









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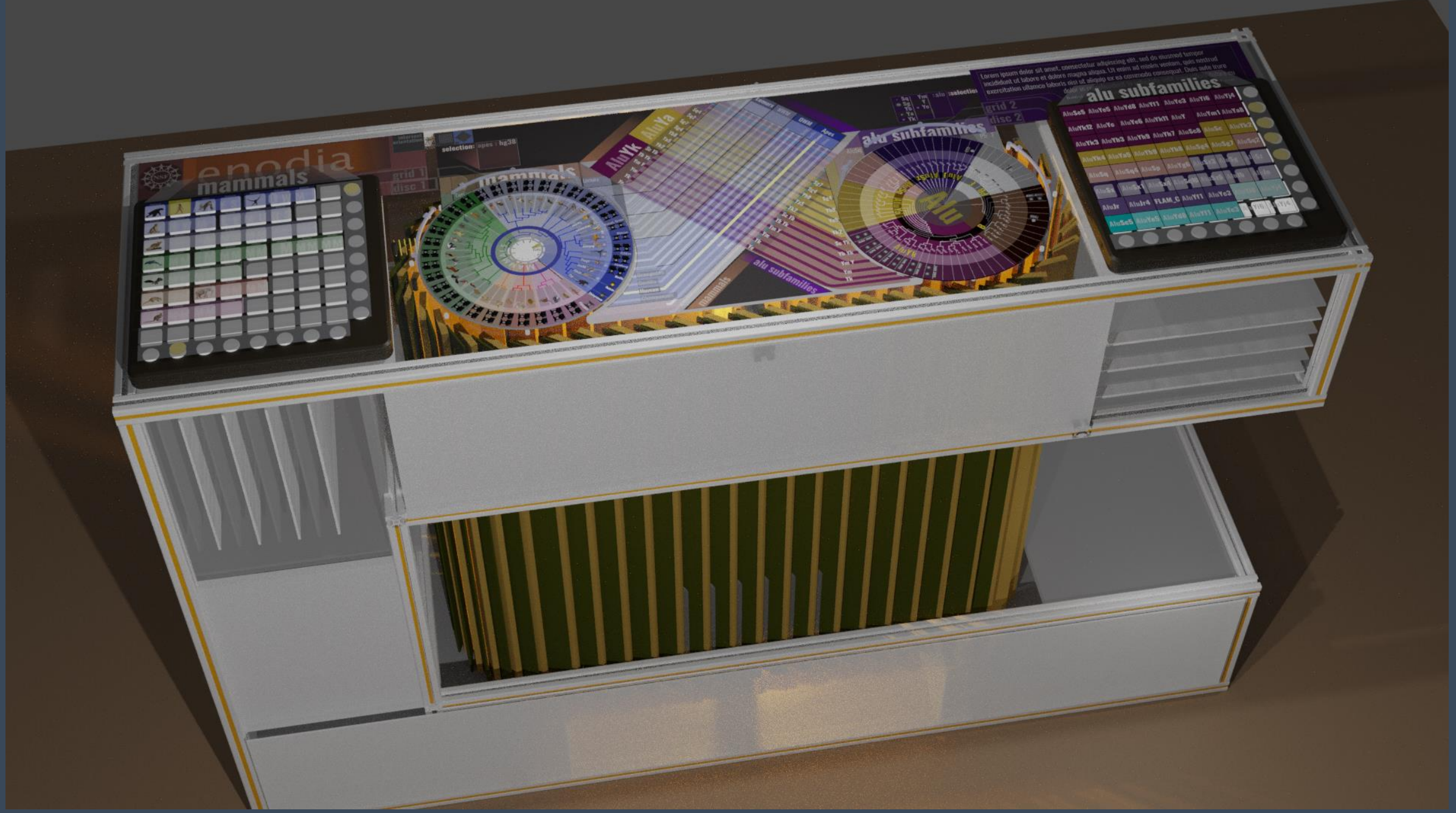
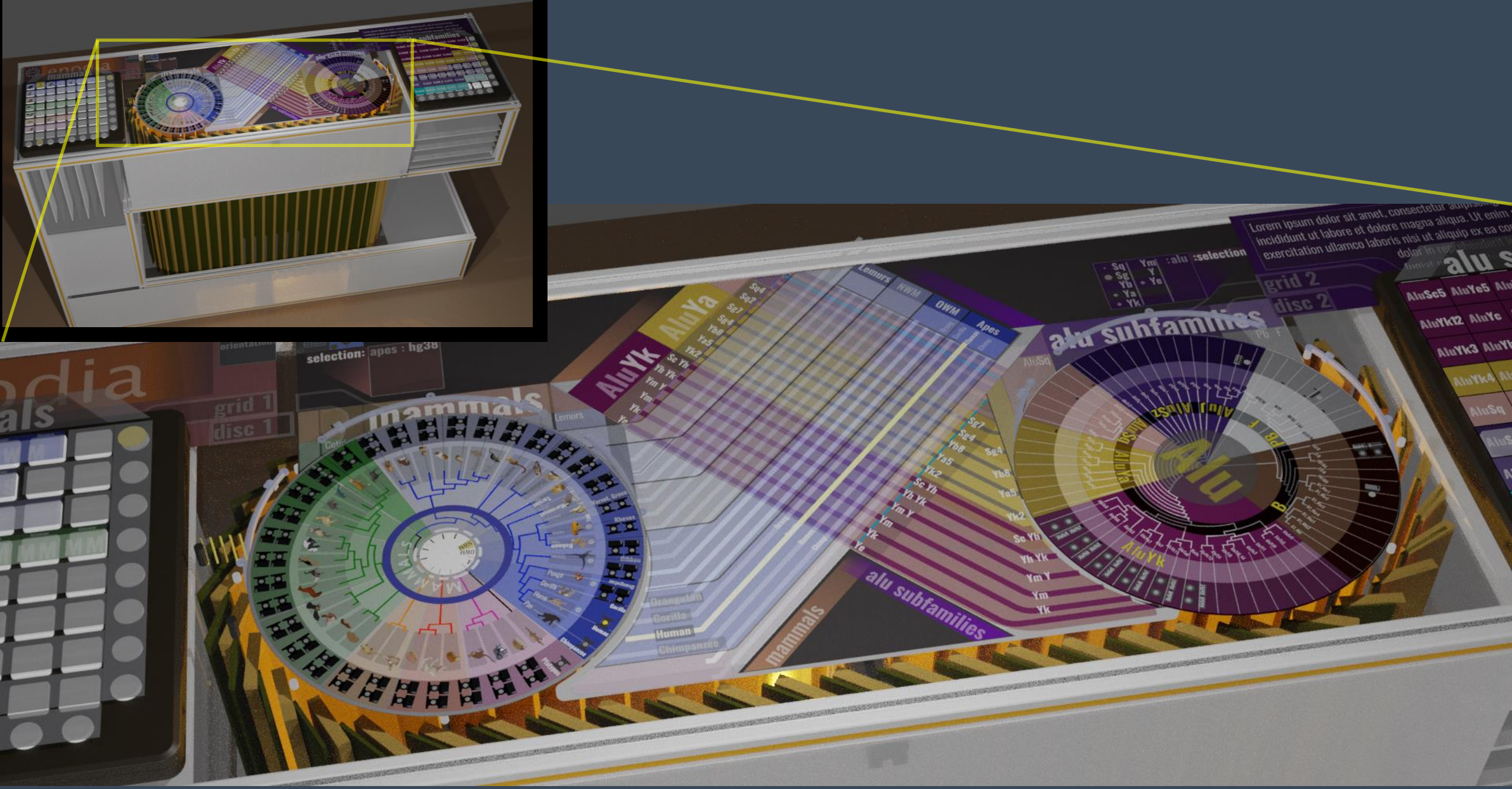
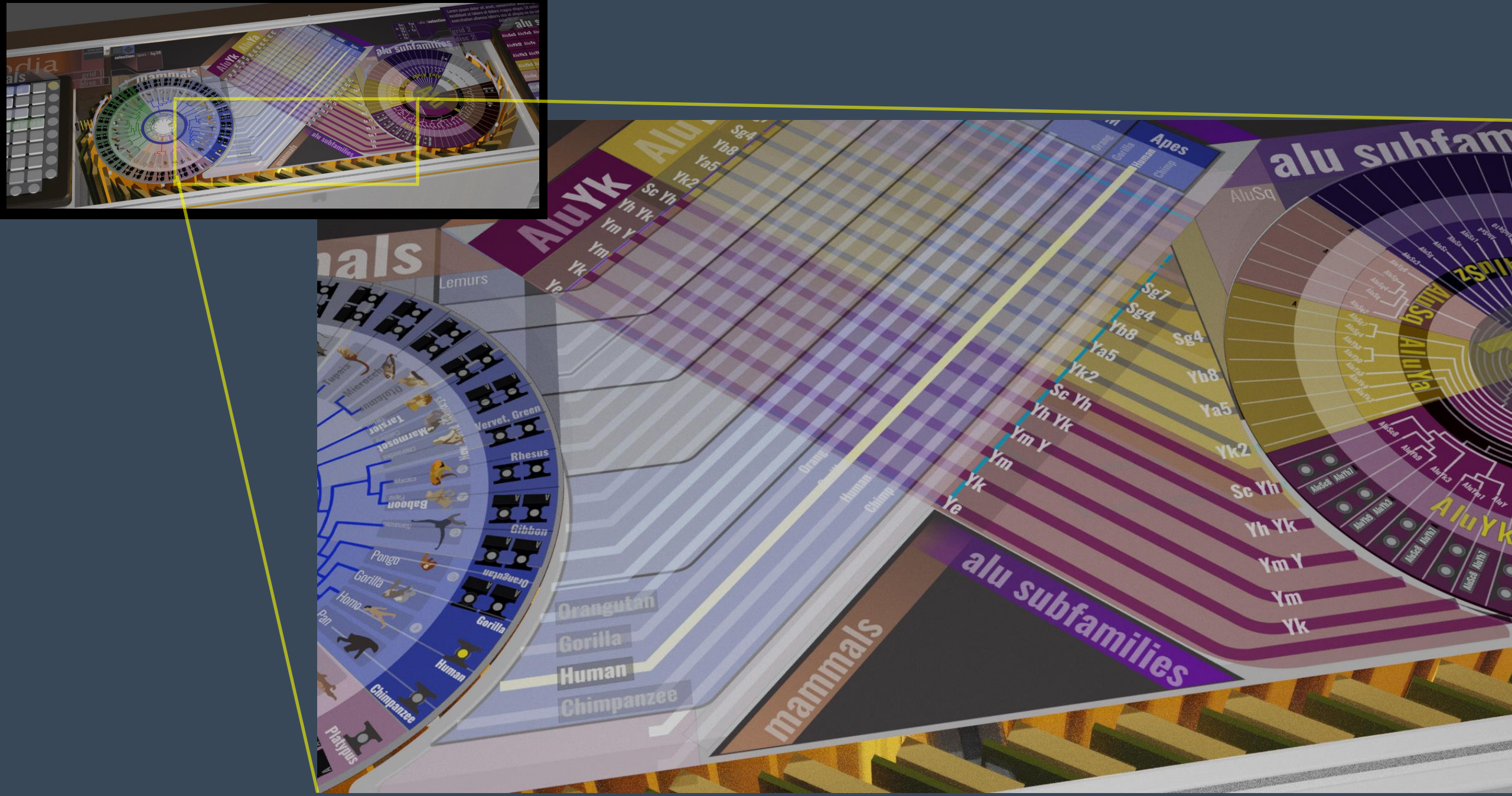

enodia
mammals
alu subfamilies


selection: apes : hg38
grid 1
disc 1
mammals
AluYa
AluYk
Lemurs
NWM
OWM
Apes
Orangutan
Gorilla
Human
Chimpanzee
alu subfamilies
grid 2
disc 2
AluSc5
AluYe5
AluYk12
AluYe
AluYk3
AluYk4
AluSq



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enodia
clemson usc
drury unc-w
xavier
NSF Research @
Clemson University
2019-04
195 Active Awards
234 Faculty PIs
$95.3M
Faculty
CAAH
CoB
CECAS
CoE
CAFLS
Science
mathematics & physical sciences
computer & information science & engineering
engineering
biological sciences
geological sciences
social, behavioral, & econo
education & human reso
MPS AST CHE DMR DMS PHY
CISE OAC CCF CNS IIS
ENG CBET CMMI ECCS EEC IIP EFMA
BIO MCB DBI IOS DEB EF
GEO AGS EAR OCE OPP
SBE SES BCS NCSE SMA
EHR DRL DGE HRD DUE
NSF ENODIA

On Chaucer, farcasters, sushi conveyors, and ATE stargates

Canterbury Tales (~1400): ~“Handsome is as handsome does” → Forrest Gump, etc. → ATE: “Stargates are as stargates do…”

http://alumni.media.mit.edu/~ullmer/snippets/river-tethys.html

Date: Mon, 17 Nov 1997 04:34:08; From: ullmer@media.mit.edu
I mentioned two specific structures which fell out of [Simmon’s Hyperion/1989] farcaster portals notion: distributed building architecture, and the River Tethys:

My home has thirty-eight rooms on thirty-six worlds. No doors: the arched entrances are farcaster portals, a few opaqued with privacy curtains, most open to observation and entry. Each room has windows everywhere and at least two walls with portals. …

The Tethys was the only webwide river, flowing past its permanent farcaster portals through sections of more than two hundred worlds and moons…

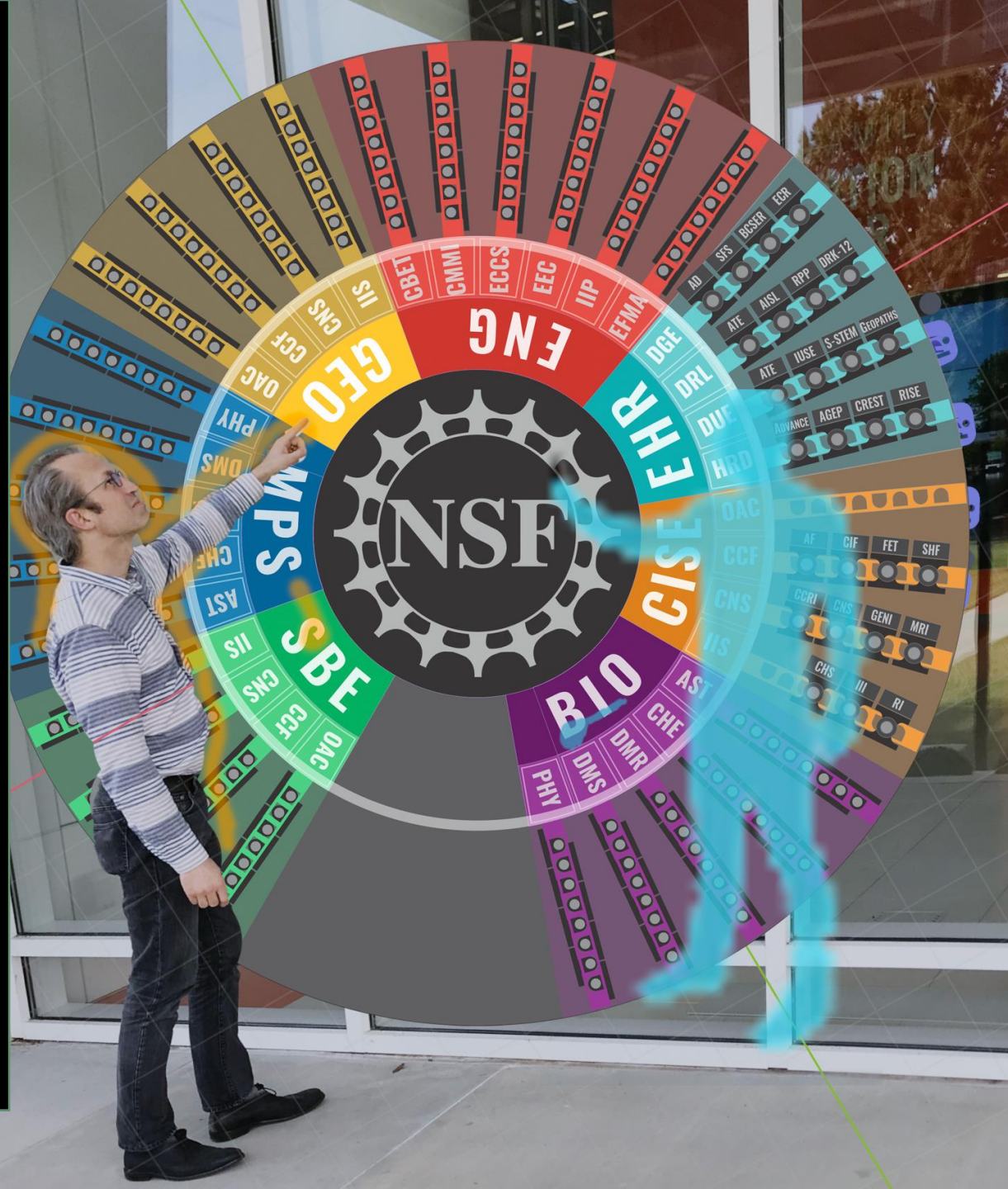
I've loved these passages for many years, as of course aspects of both concepts are indeed realizable to amazing effect.

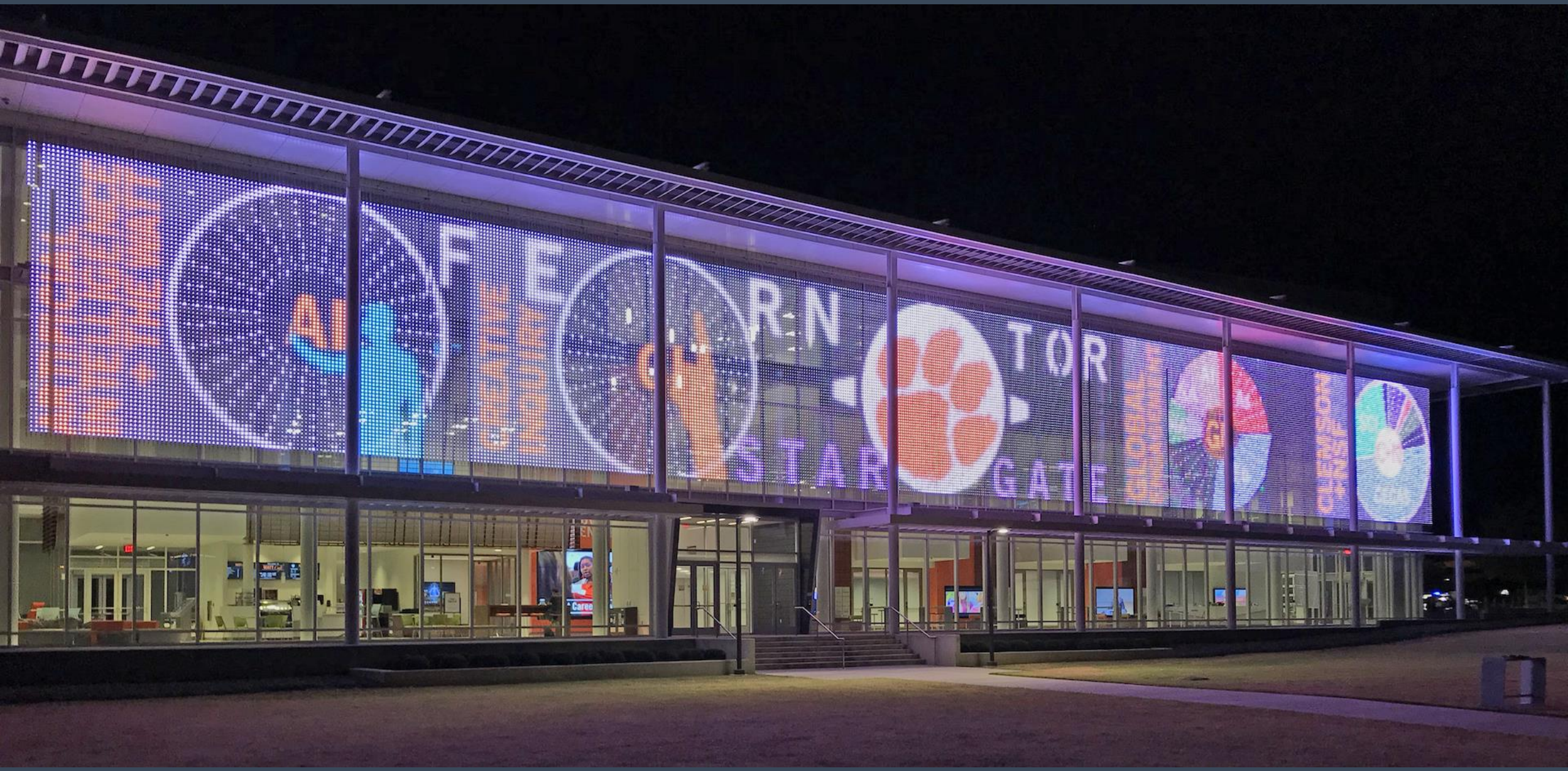
zeitgeist	“time ghost”	
fernseher	“far seer”	/ television
fernrohr	“far pipe”	/ telescope
ferntor	“far gate”	
	“far goal”	

linking distant people, places, pursuits

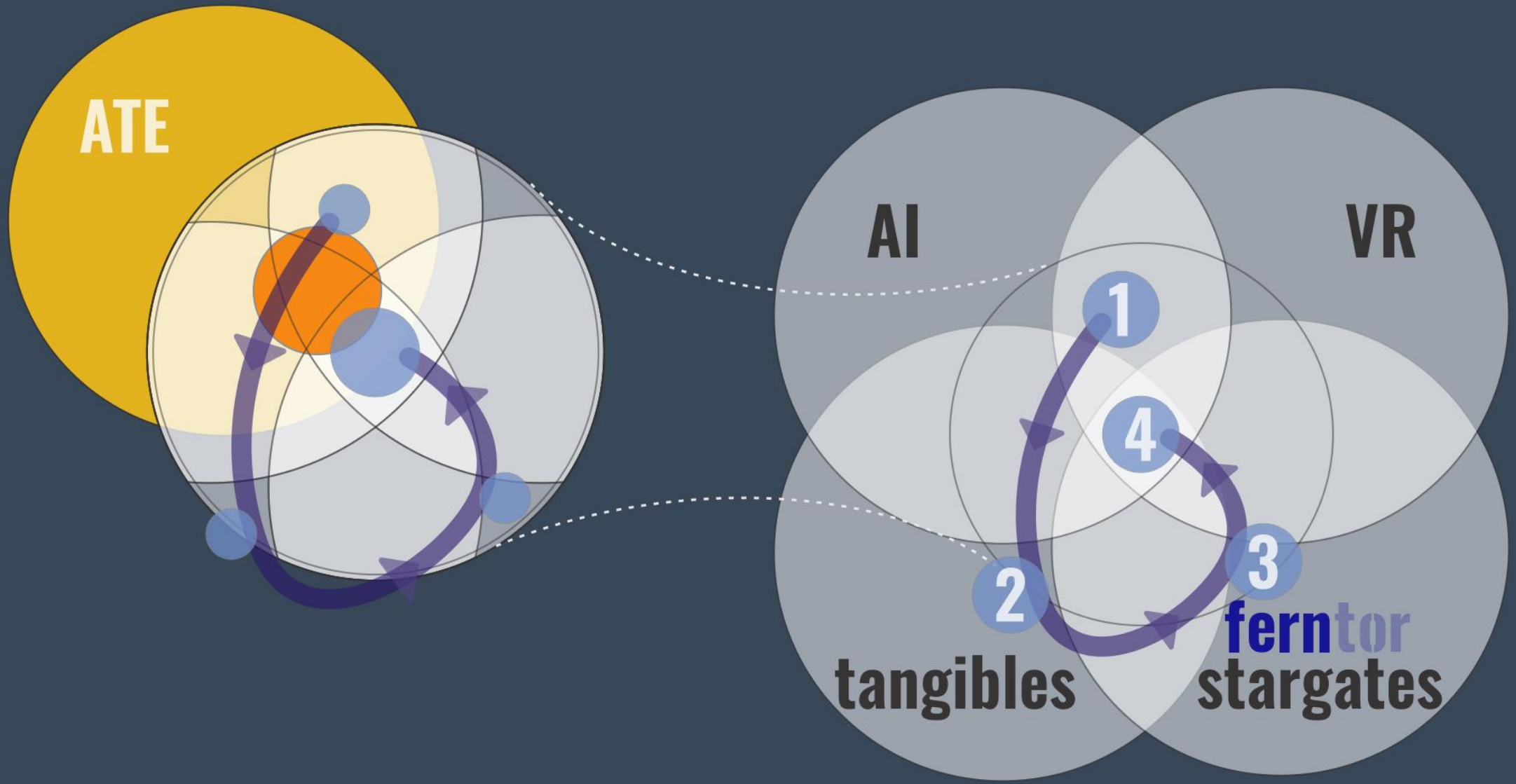
Pedelecs


FERNTOR
STARGATE
PLACES
THEMES
CHARLESTON
CLEMSON
DOMINICA
GERMANY
CELLS
GENOME
BRAIN


NSF
ENG
CBET
CMMI
ECCS
EEC
IIP
EFMA
GEO
IIS
CNS
CCF
OAC
PHY
OMS
MPS
AST
CHE
SBE
IIS
CNS
CCF
OAC
BIO
AST
CHE
DMR
DMS
PHY
CISE
EHR
DGE
DRL
DUE
HRD
OAC
CCF
CNS
IIS
AD
SFS
BOSER
EGR
ATE
AISL
RPP
DRK-12
ATE
IUSE
S-STEM
GEOPATHS
ADVANCE
AGEP
CREST
RISE
AF
CIF
FET
SHF
CCRI
CNS
GENI
MRI
CHS
III
RI


FE
R N
T O R
STAR
GATE

Title terms: another perspective



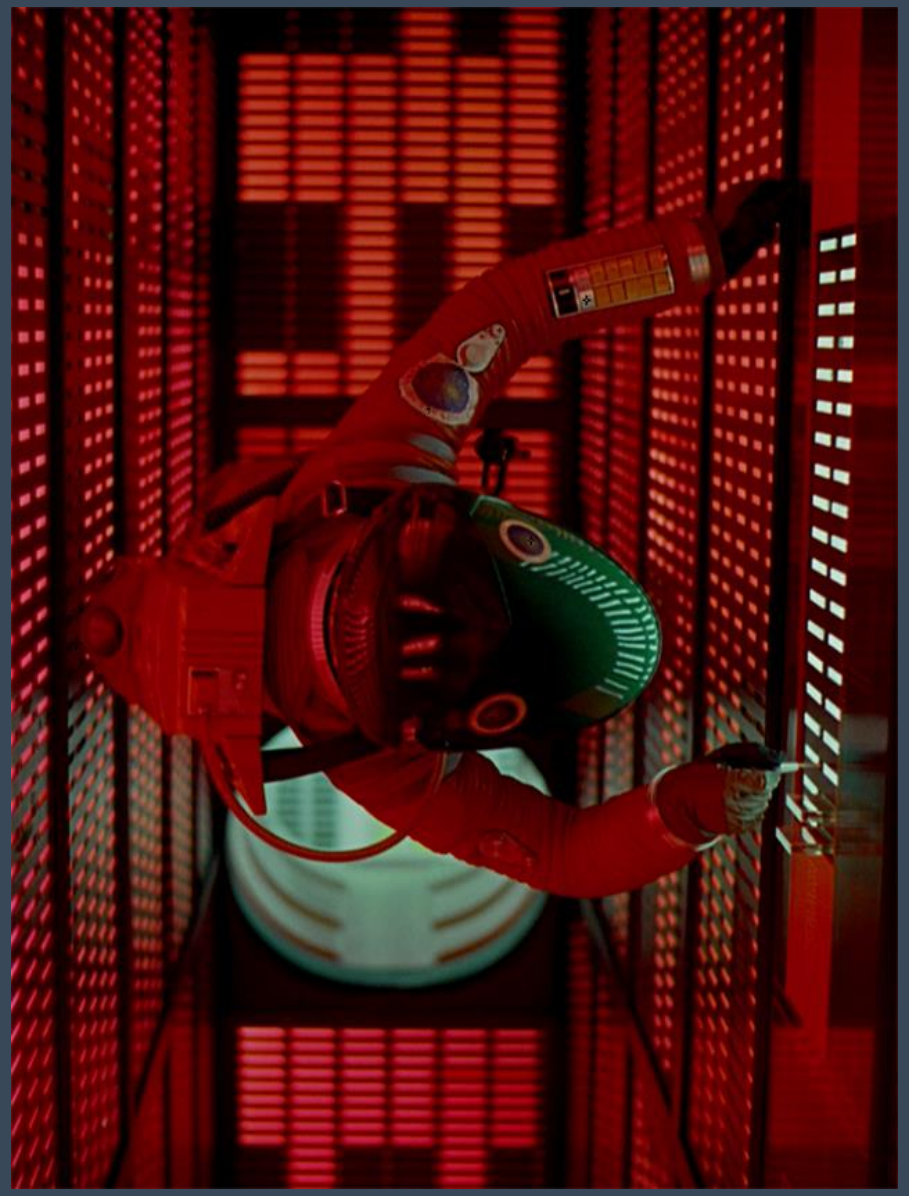
https://www.power-eng.com/2010/03/01/duke-energy-replaces-its-personnel-contamination-monitors-at-oconee-nuclear-station/

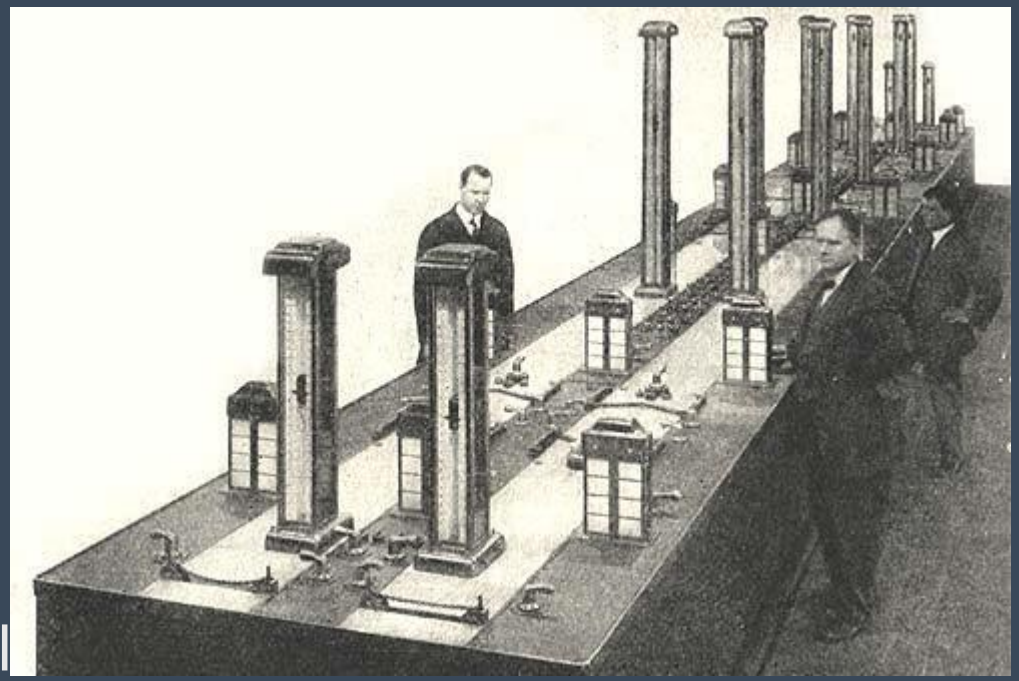
Contamination monitors are an essential component of a nuclear power plant's radiation safety program… Duke Energy will replace Oconee's existing personnel contamination monitors with Mirion's next-generation gasless body contamination monitors…

https://www.wired.com/story/radioactivity-sensor-hacks/

2017.07: At the Black Hat security conference Wednesday, security researcher Ruben Santamarta laid out a series of potentially hackable security flaws in the software and hardware systems [of] a common model of radioactivity sensor at nuclear power facilities. … Santamarta found that anyone who possessed [Mirion sensors] could use it to send false data back to the [transceiver] that accepts data from those detectors. … With those rogue sensors and an antenna, Santamarta says he could send spoofed data to a nuclear plant's Mirion transceivers from as far away as 30 miles…

Vinge, A Fire Upon the Deep (1992):
"Till… ready, it will feed them lies, on every camera, in every [IoT update]…. Even this crude machine had thousands of robot sensors scattered across its surface, reporting status and danger, driving utility programs. …[an update upon] a failure sensor, a sensor that reported critical changes…. Its interrupts could not be ignored …."





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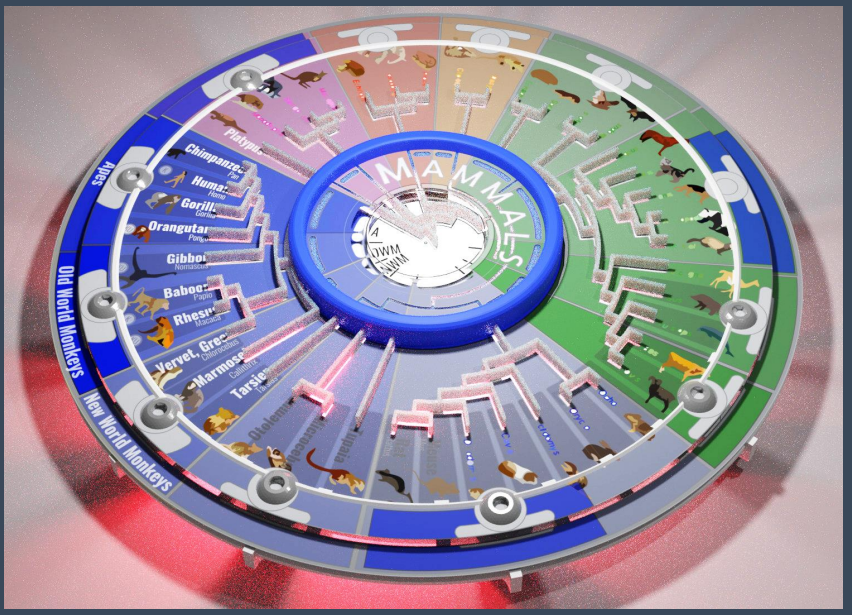

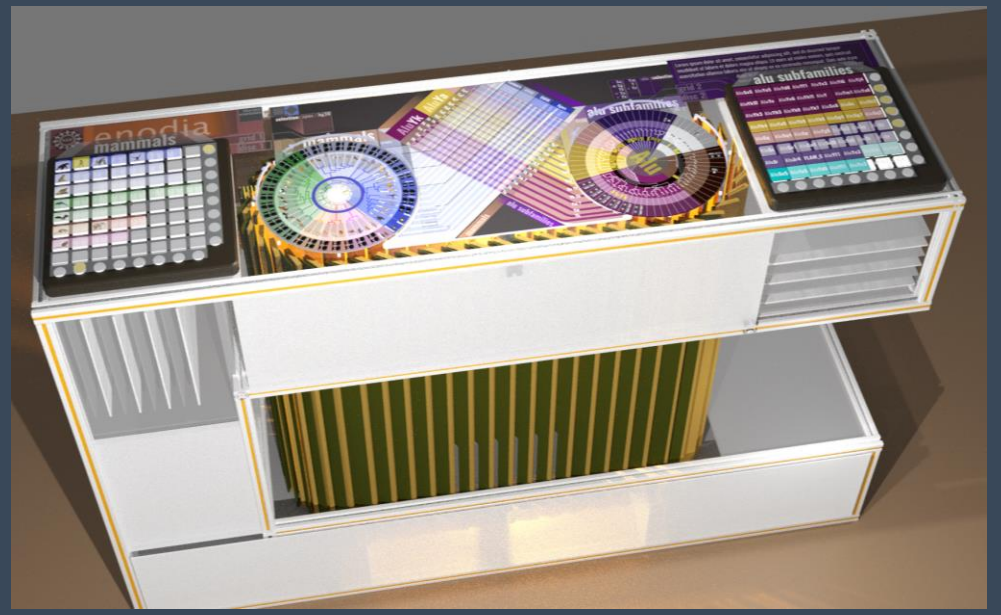

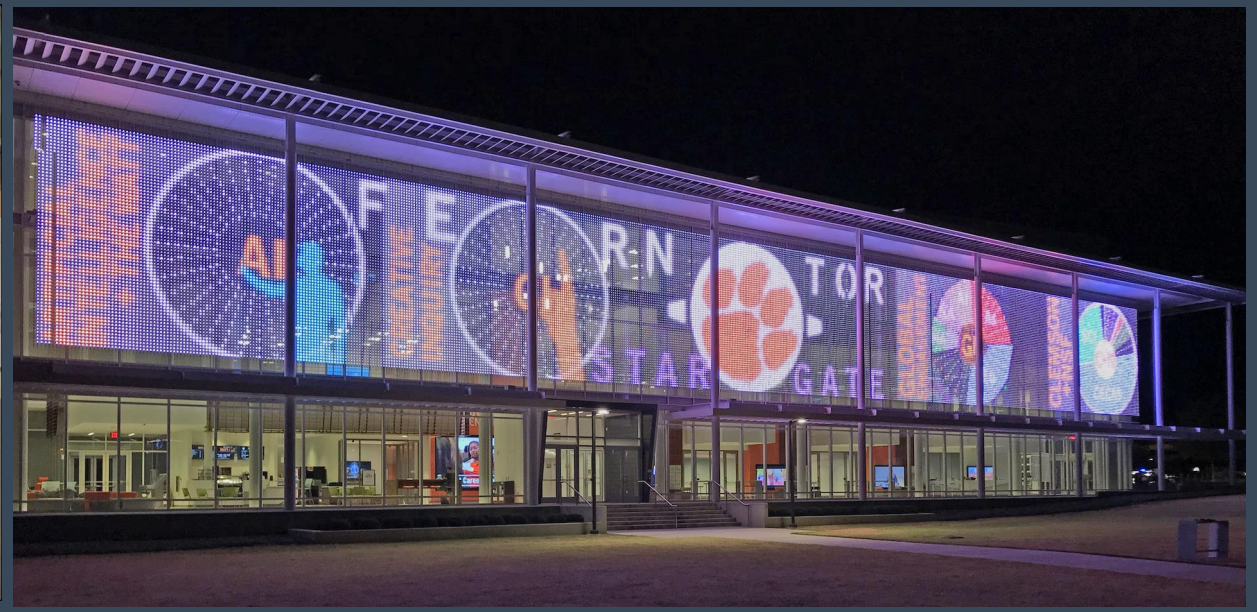

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Acknowledgements

Faculty: Konkel, Branton, Kooima

Graduate students:

CU: Nasiri, Siquiera, Liu

LSU: Ardaud, Dardar, Jandhyala, Kallakuri, Liu, Sankaran, Setty, Thatte, Toole

Undergraduate students:

CU: Halabi, Wood, Moore, King, Seese

LSU: Barrett, Baldwin, Birk, Guitreau, Hamilton, Hargrove, Hibbler, Wiggins; Bradford, Carroll, DeLatin, Dell, Dever, Diabi, Douthut, Foley, Gavin, Hess, James, Laan, Losso, Morris, Oliver, Ramb, Reeser, Seidel, Stewart, Sun, Tregre, Wallace, Washington, Wesley-Smith, Wiley

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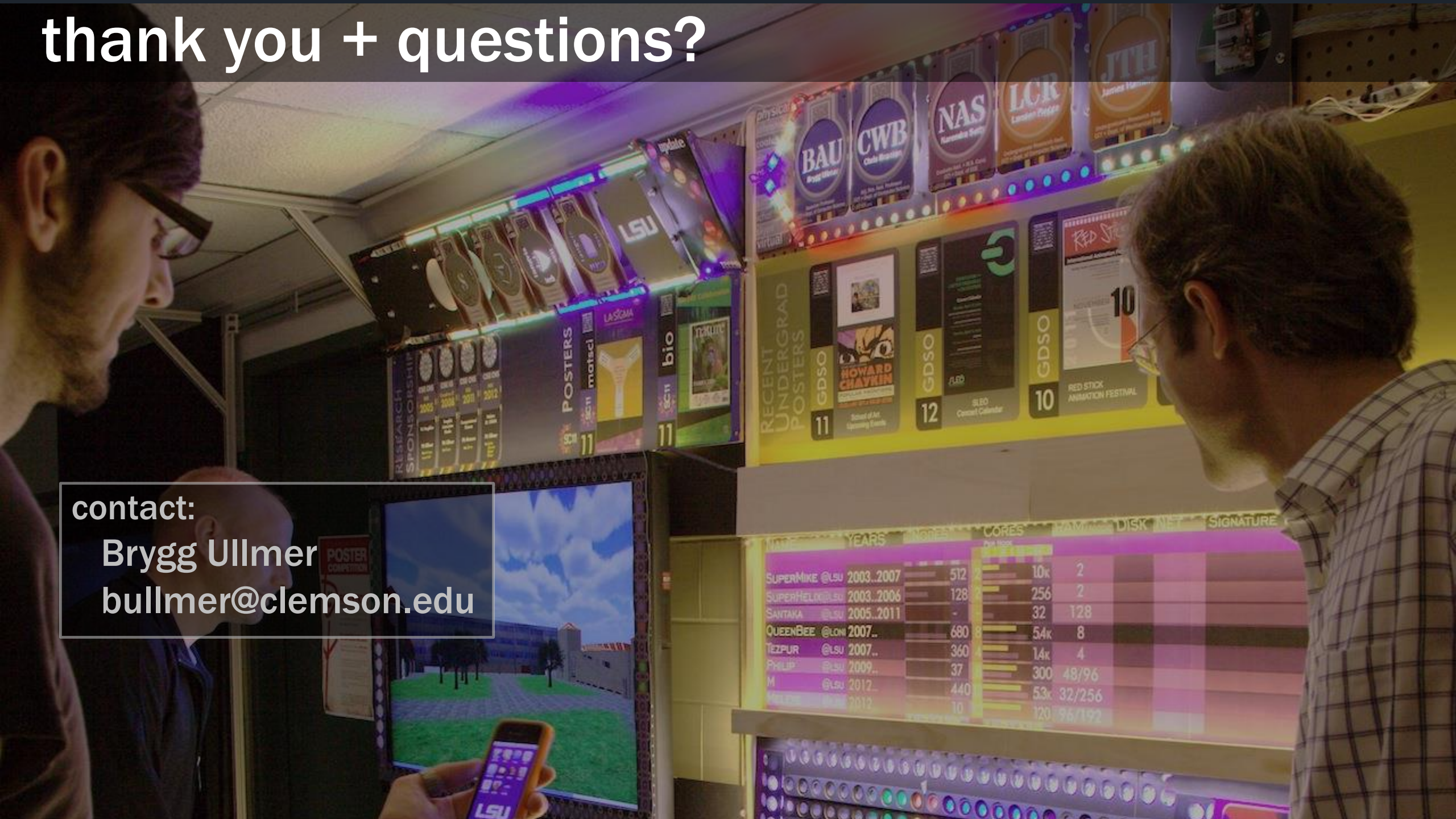
Early work: Colleagues and sponsors of MIT Media Lab Tangible Media Group (esp. IBM, AT&T, Mitsubishi), Sony CSL Interaction Lab, ZIB Visualization Group, AEI MPG, et al.

thank you + questions?



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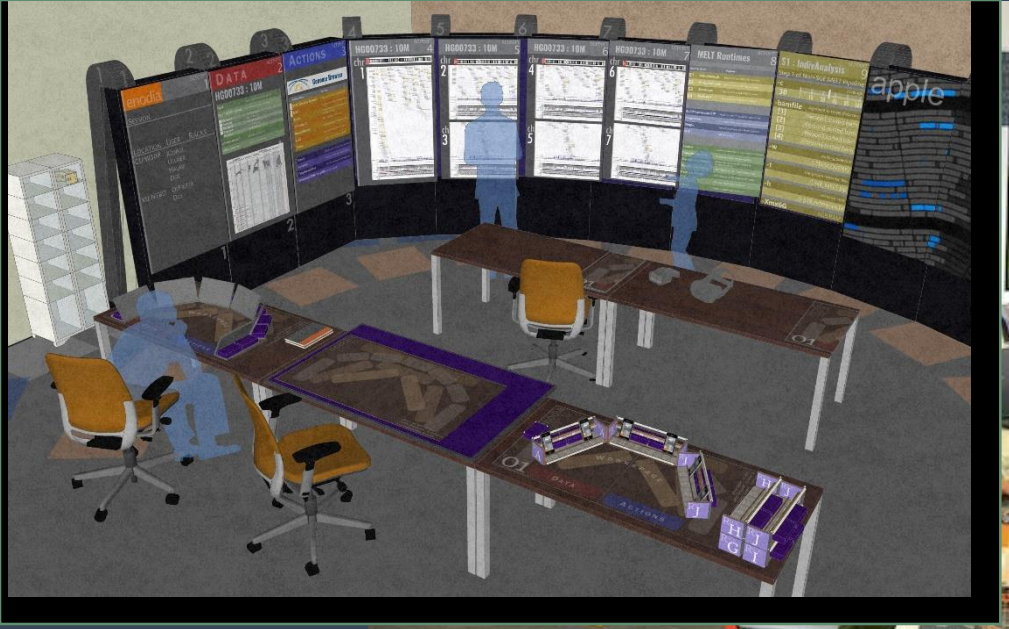
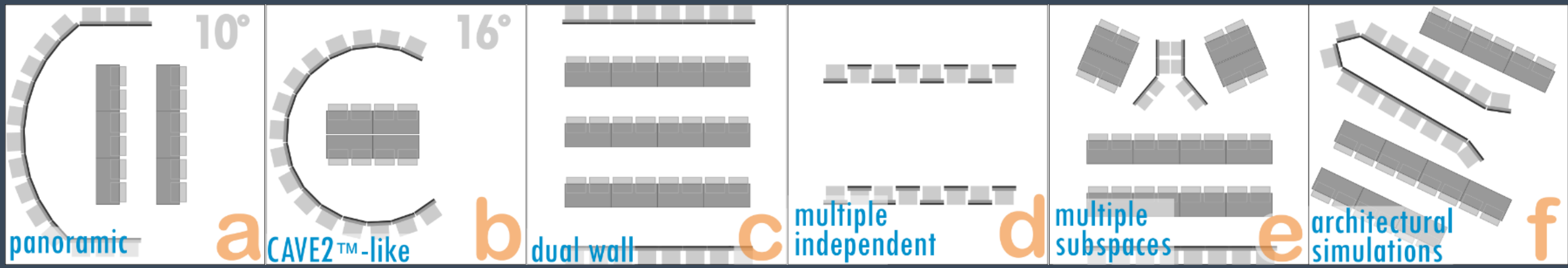
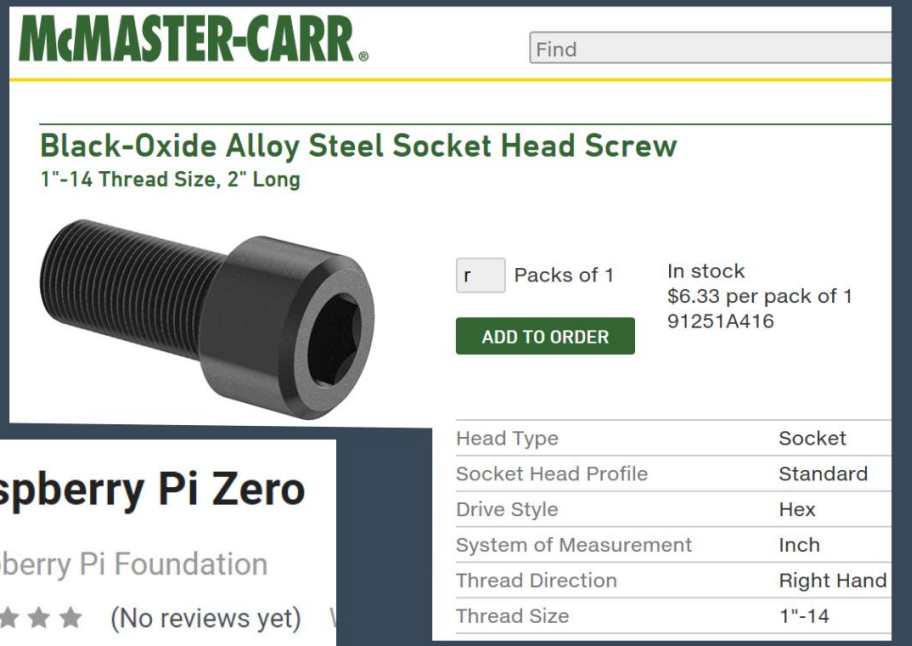
Brygg Ullmer
bullmer@clemson.edu

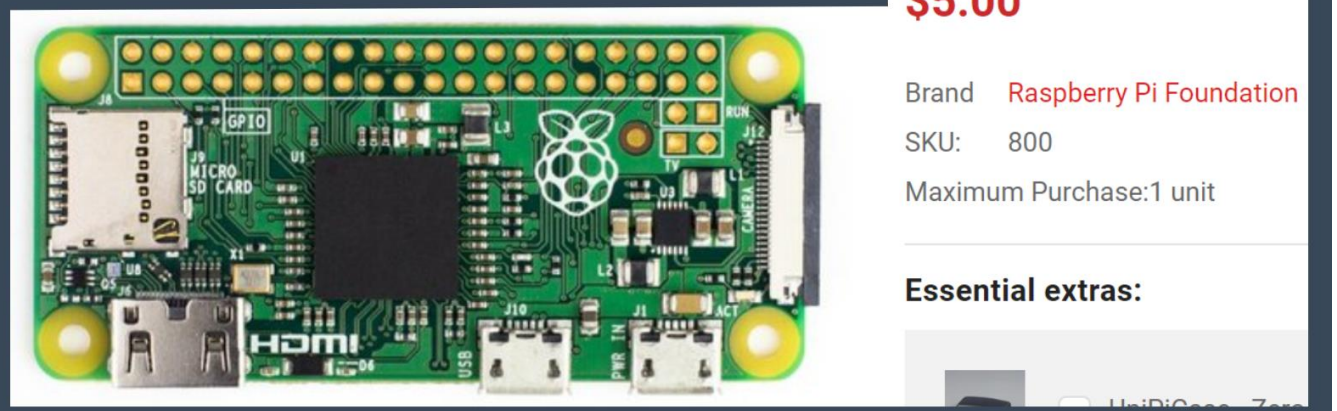

enodia
DATA
Actions
apple

S1 IndivAnalysis
NSF ENODIA
NSF ENODIA
Times Used
Cont Rids
A
B
DATA


10°
16°
panoramic
a
CAVE2™-like
b
dual wall
c
multiple independent
d
multiple subspaces
e
architectural simulations
f

Opportunity cost





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Converting industrial protocols with AWS IoT Greengrass

by Dr. Markus Bestehorn | on 08 OCT 2019 | in AWS Greengrass, AWS Lambda, Expert (400), Internet Of Things | Permalink | Share

Gaining access to sensor data or telemetry of industrial machines is a key requirement for implementing high-value use cases around smart manufacturing or Industry 4.0. For instance, predictive maintenance or automated quality control is not possible without having such data at a high temporal resolution.

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CLEMSON CECAS
COMPUTING
LIFT
GLOBAL
ENGAGEMENT
HCC
W.P.Y
VC
W.P.Y
VIRTUAL ENV
CU-DRIVE
HAT
PRESIDENT
CU-GAME
VIRTUAL ENV
HAT
TRACE
VIRTUAL ENV
TANGIBLE VIZ

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Italienisches Kulturstück