

VR VERTICALS

*MIT VR Hackathon
Oct 7, 2017*

Jason Jerald, PhD



70+ Projects, 40+ Organizations



VR Applications Beyond Gaming

Real Estate
Medical Visualization
Command & Control
Scientific Visualization
Computer-Aided Design
Education
Simulation & Training
Telepresence
Tourism
Design Review/Markup
Proposals

Advertising and Marketing
Location Based Exhibits
Retail
Crime Scene Investigation
Psychological studies
Human performance/factors
engineering
Rehabilitation
Pain Distraction
Immersive Film
Sports

Today's Five VR Applications

1. Training
2. Medical Visualization
3. Computer-Aided Design
4. Retail
5. Education

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Training

What IS training?

Relevant practice with feedback

The shortest path to mastery

By training for any conceivable scenario, the trainee is able to instinctively respond optimally to any event at any time.

What IS NOT training

Multimedia

A Game

A Virtual World

But training
can include
these aspects

The goal is NOT to replace current training methods, simply augment them to improve effectiveness and efficiency, at a reduced cost.

Training

90% of experimental comparisons favor simulator + aircraft training over aircraft training alone

Why?

- Lower cost / increased availability of training
- More efficient use of training time
- Ability to practice rare / dangerous events

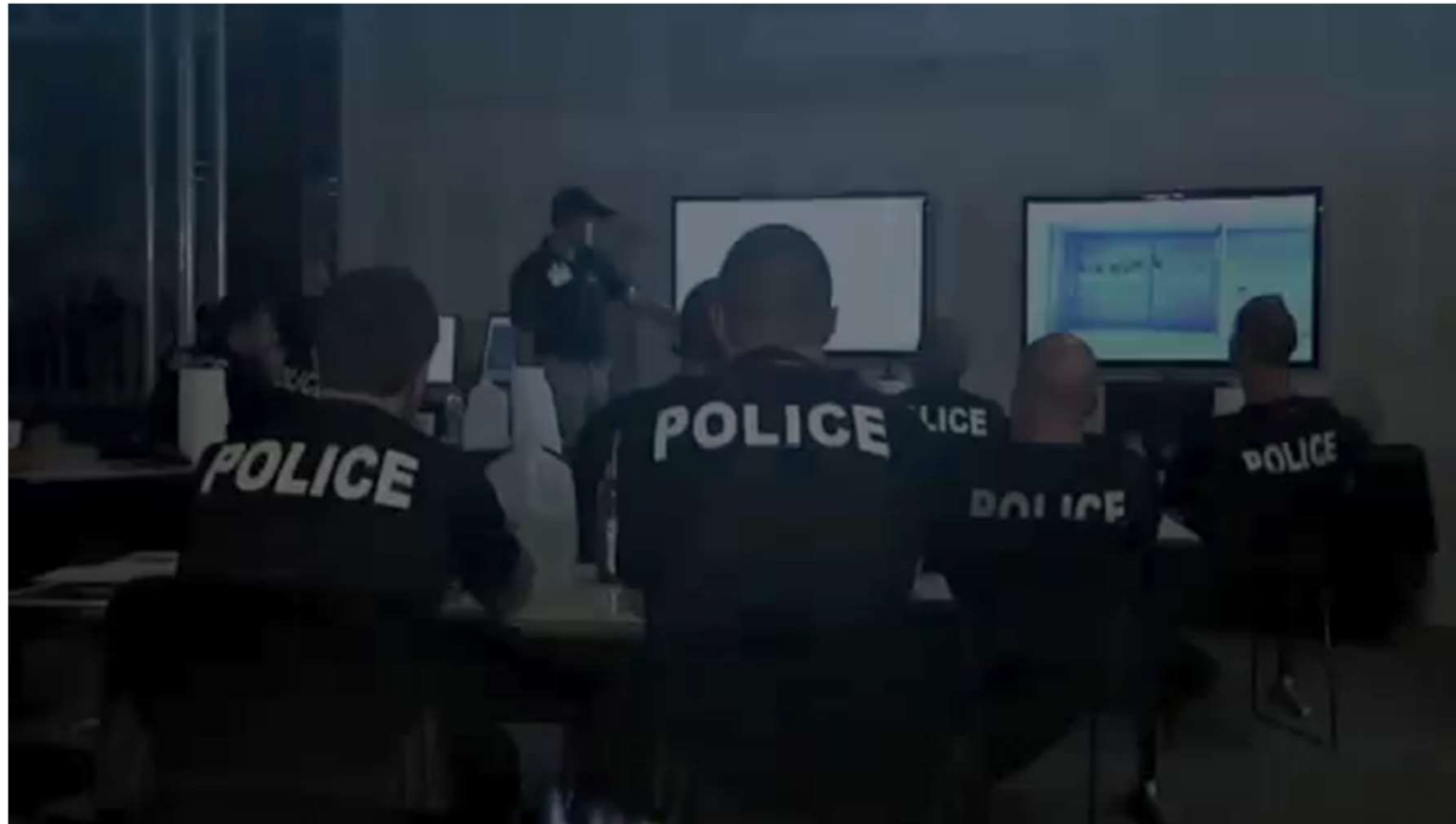
Training

VirtSim by Motion Reality



Training

VirtSim after action review

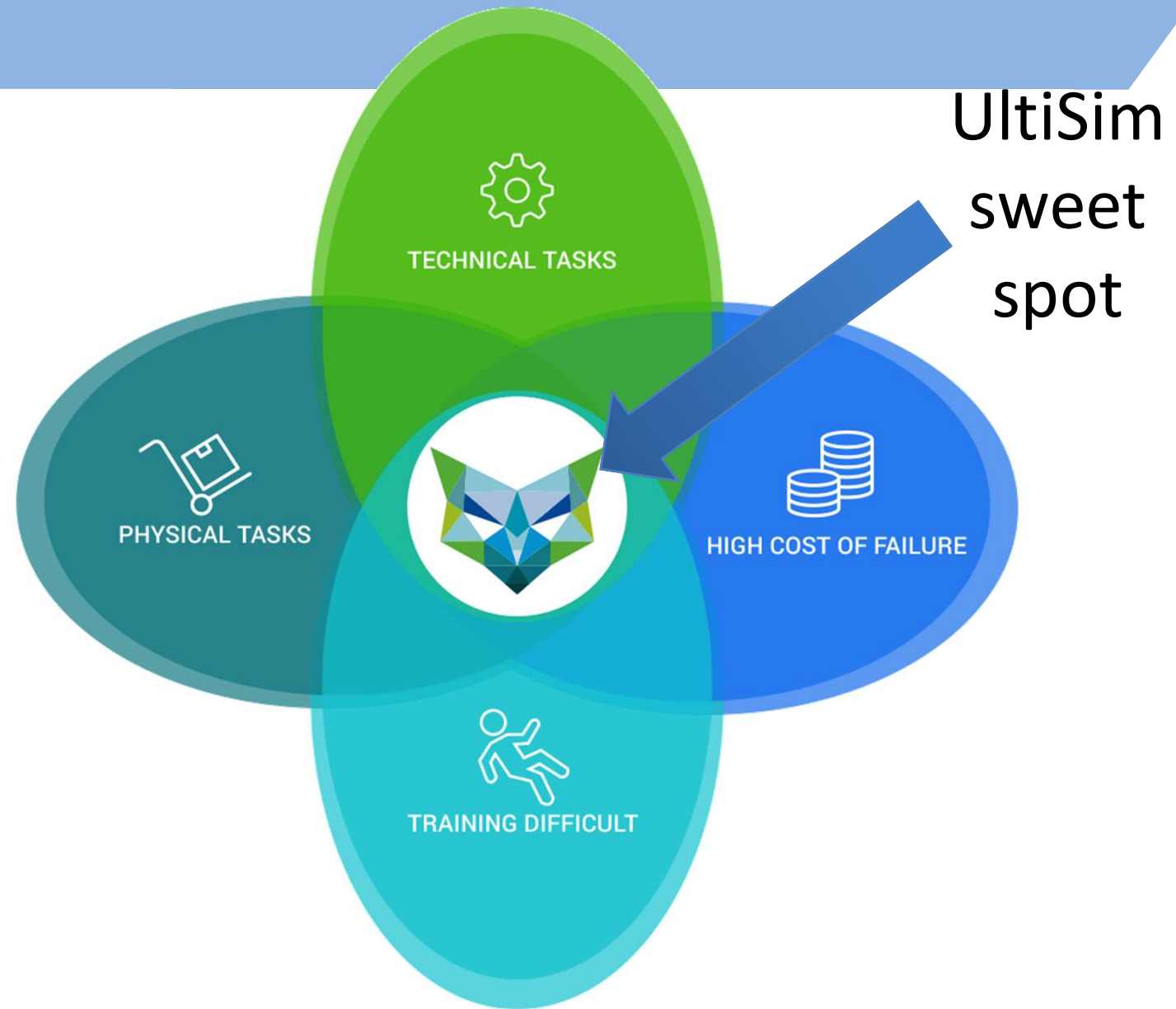


Training



ultisim

The flight
simulator for your
business



Training



BP Convenience Retail Simulation

- ✓ Improved passing rate from 40% to 100%
- ✓ Training time reduced by a third
- ✓ Lower training cost
- ✓ Over 12,000 retail stations
- ✓ Millions of Dollars a year in savings



**CIO Magazine 2009
Innovation Award**

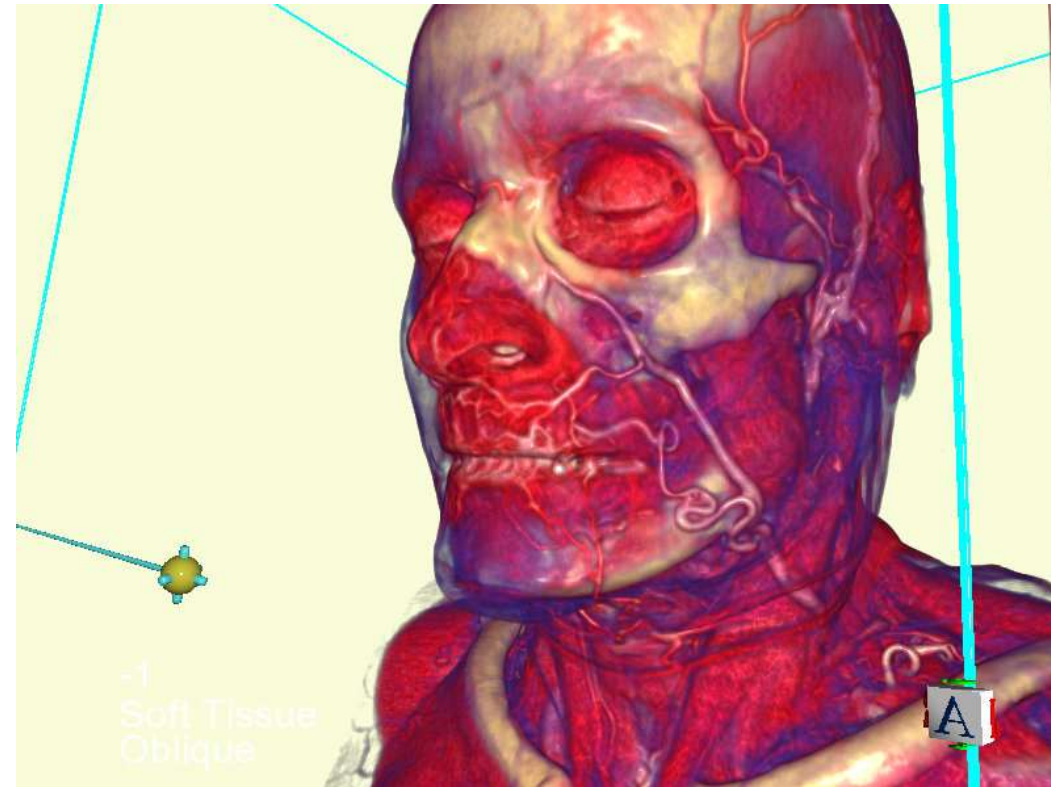
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Today's Five VR Applications

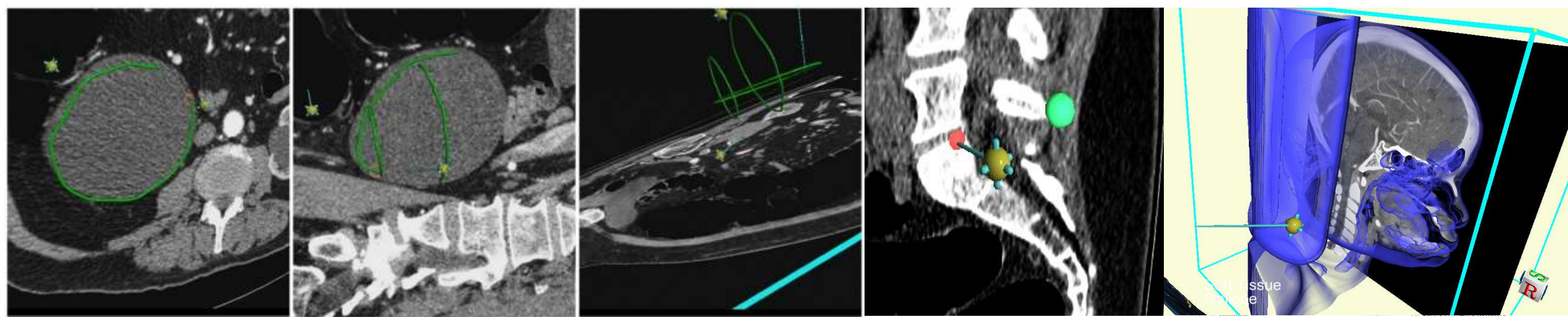
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Medical Visualization

iMedic by *Digital ArtForms*

Immersive Medical Environment for Distributed Interactive Consultation

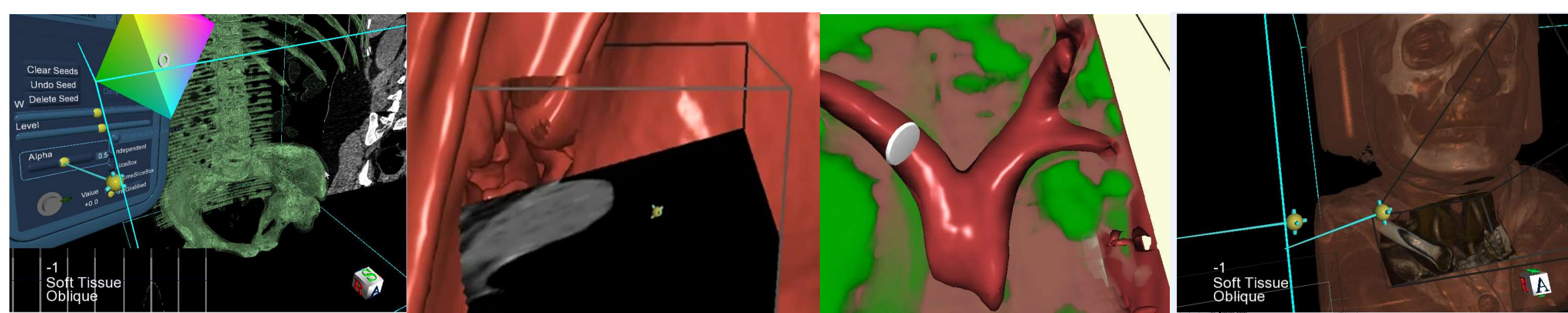


Congressional funding provided by the U.S Army's Telemedicine & Advanced Technology Research Center

Medical Visualization

iMedic by *Digital ArtForms*

Immersive Medical Environment for Distributed Interactive Consultation

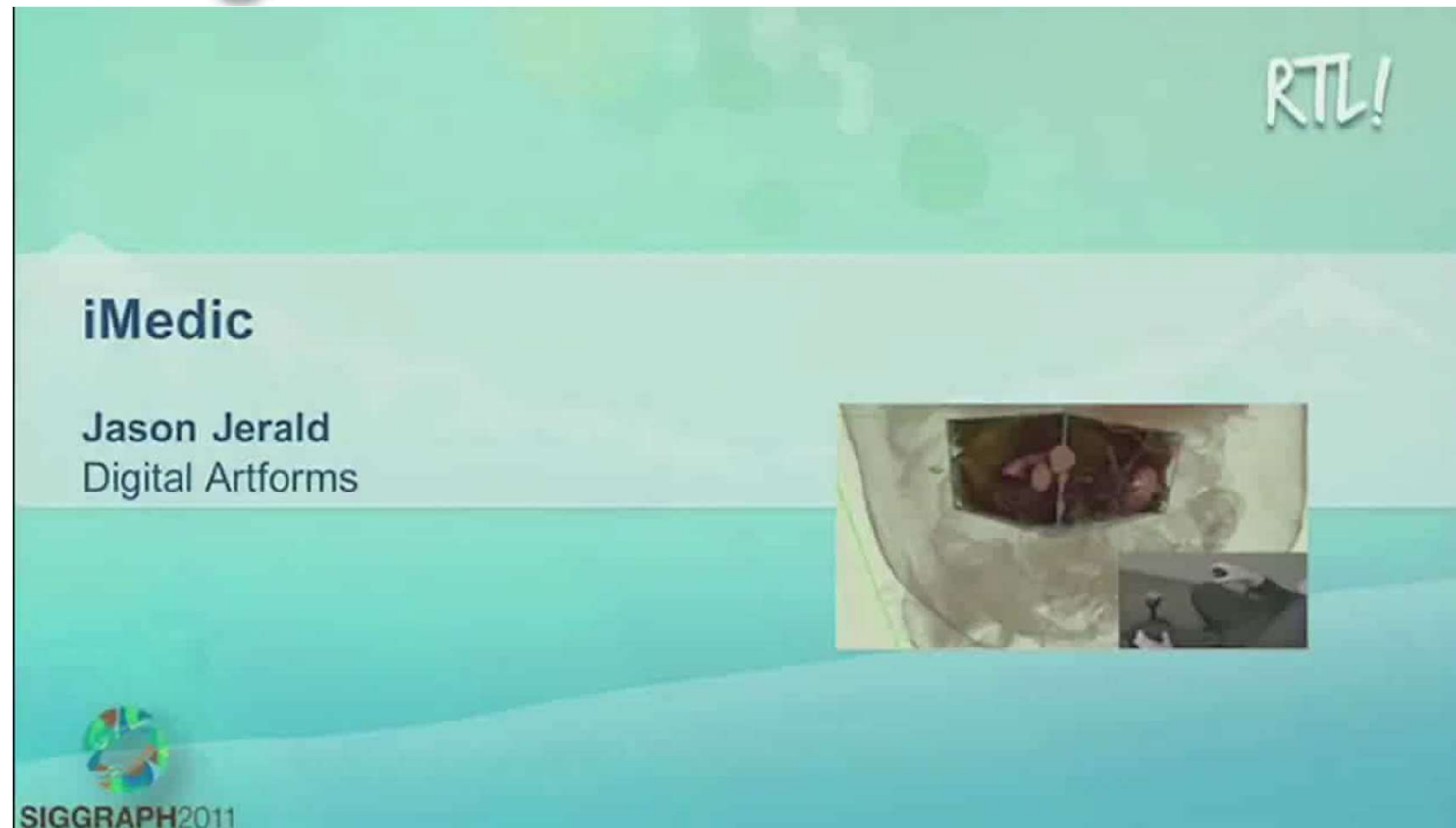


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Medical Visualization

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Medical Visualization

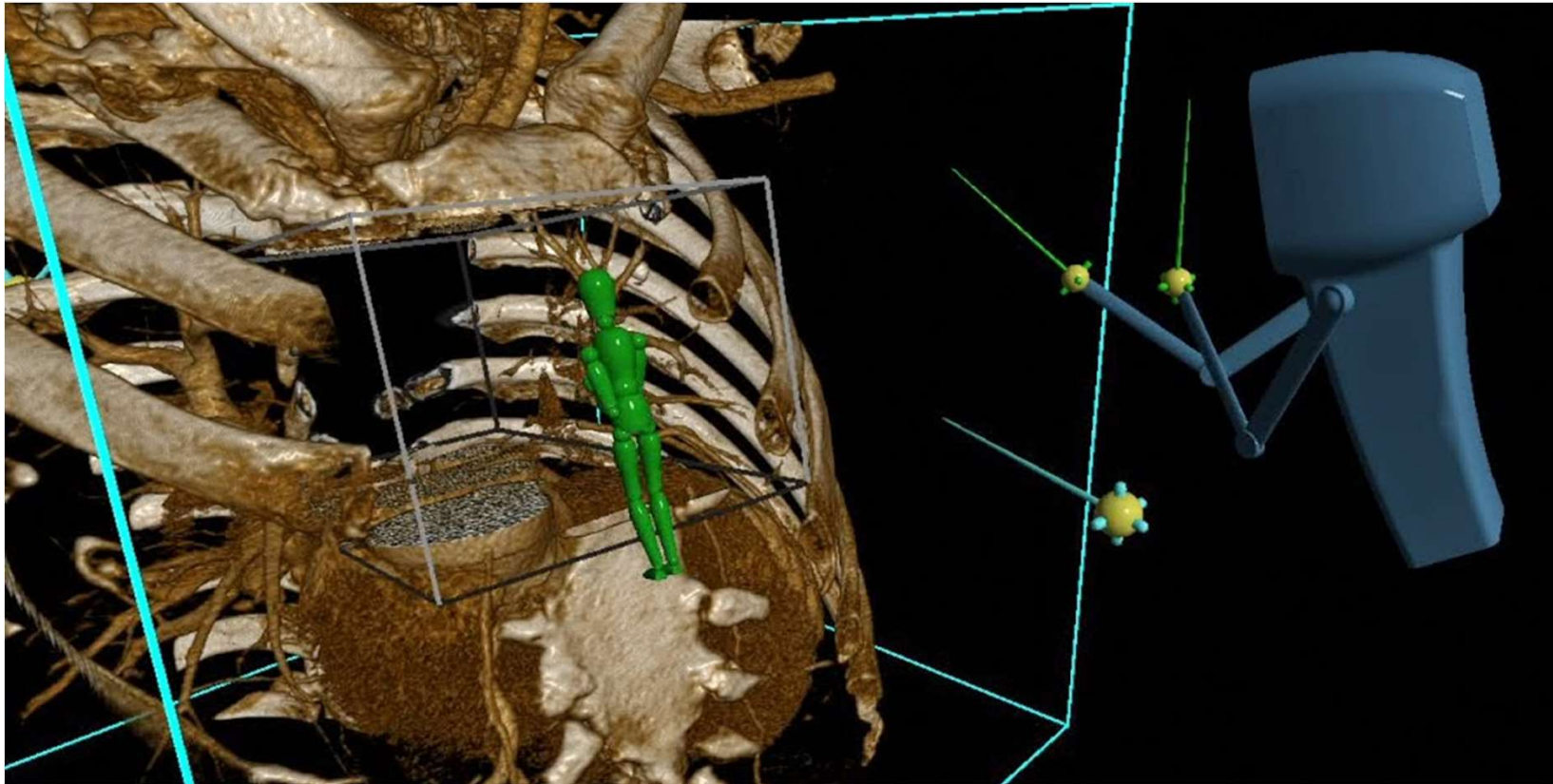
iMedic—How does it work?

3D Multitouch

- ✓ Appropriate for abstract non-realistic interactions
- ✓ Content/data independent
- ✓ Written Specifically for immersive interaction
- ✓ Solves gorilla arm
- ✓ Reduces sim sickness

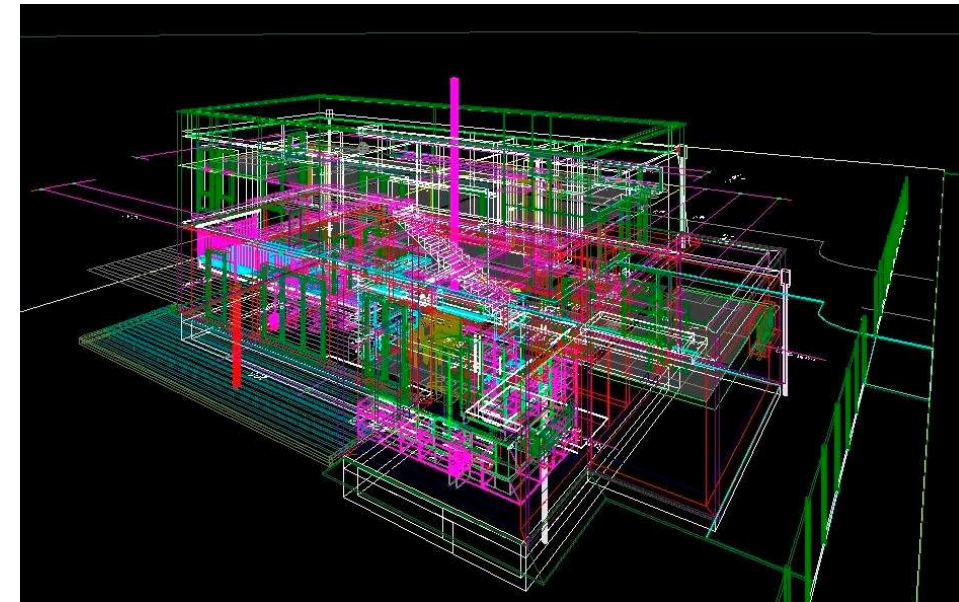
Medical Teleconsultation

iMedic by *Digital ArtForms*



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Computer-Aided Design

Immersive modeling challenges

- ✓ Not just polygons & special effects
- ✓ Large number of options
- ✓ Precision
- ✓ Gorilla arm

3D Multitouch: Computer-Aided Design ^(video)



MAKEVR by  **VIVE STUDIOS**,  **SIXENSE**, & *Digital ArtForms*

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Retail

vRetail by  **SIXENSE™**



Retail

Many other forms

- ✓ From direct sales to attracting customers
- ✓ Back end story approach
- ✓ Put the customer into the creation process
- ✓ Merge entertainment with shopping
- ✓ Try before you buy
- ✓ Analytics and metrics

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Education

What does our workforce need in the future?

The ability to operate across a broader span of tasks and situations, creating new demands:

- ✓ Increased complexity of work
- ✓ Continuous competency development
- ✓ Different ways of thinking
- ✓ Cognitive overload

Source: US General Services

Administration

Education

“Tell me and I will forget.

Teach me and I will remember.

Involve me and I will learn.”

- Benjamin Franklin

Education

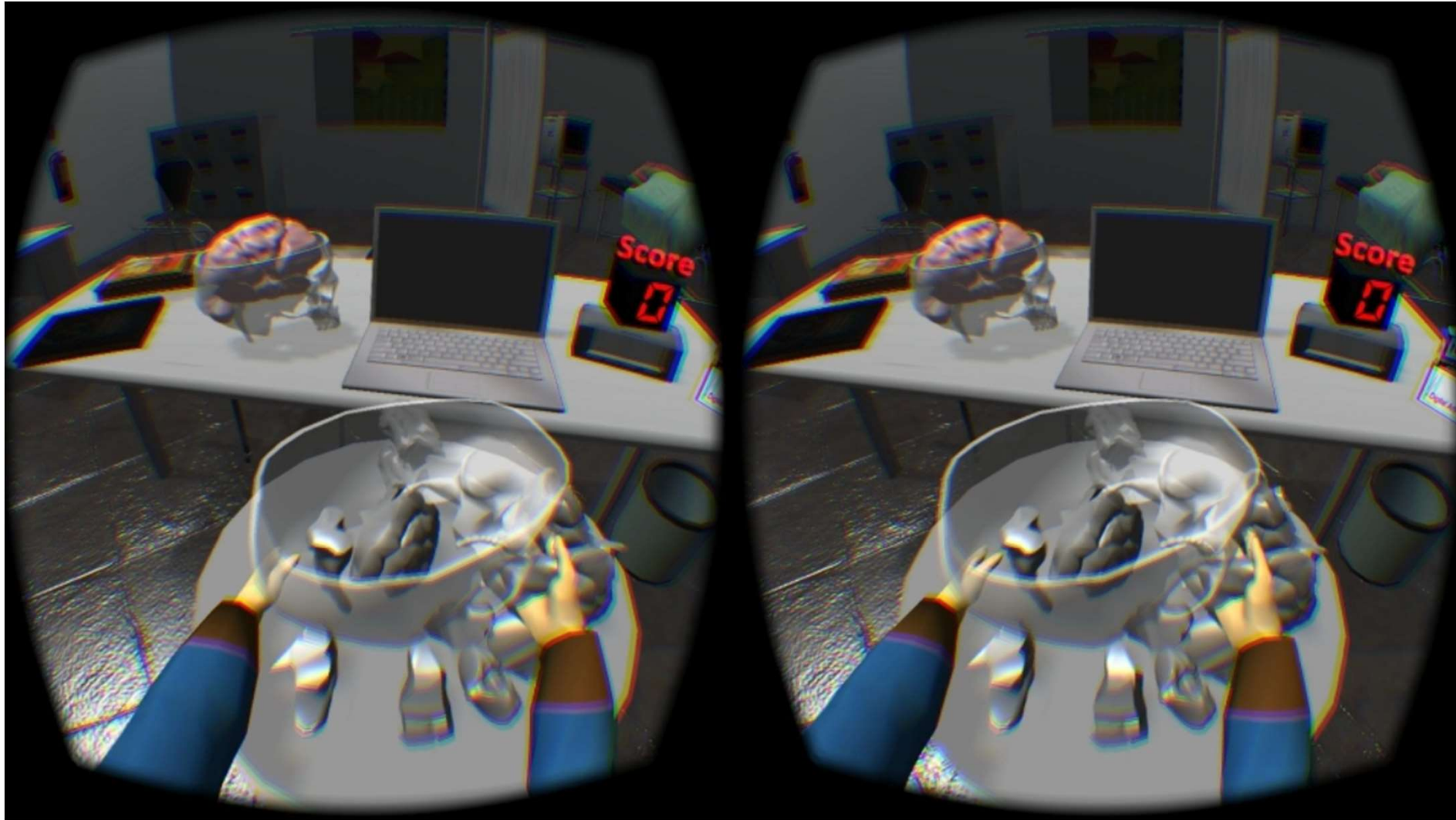
Neuroscience Education by

Digital ArtForms

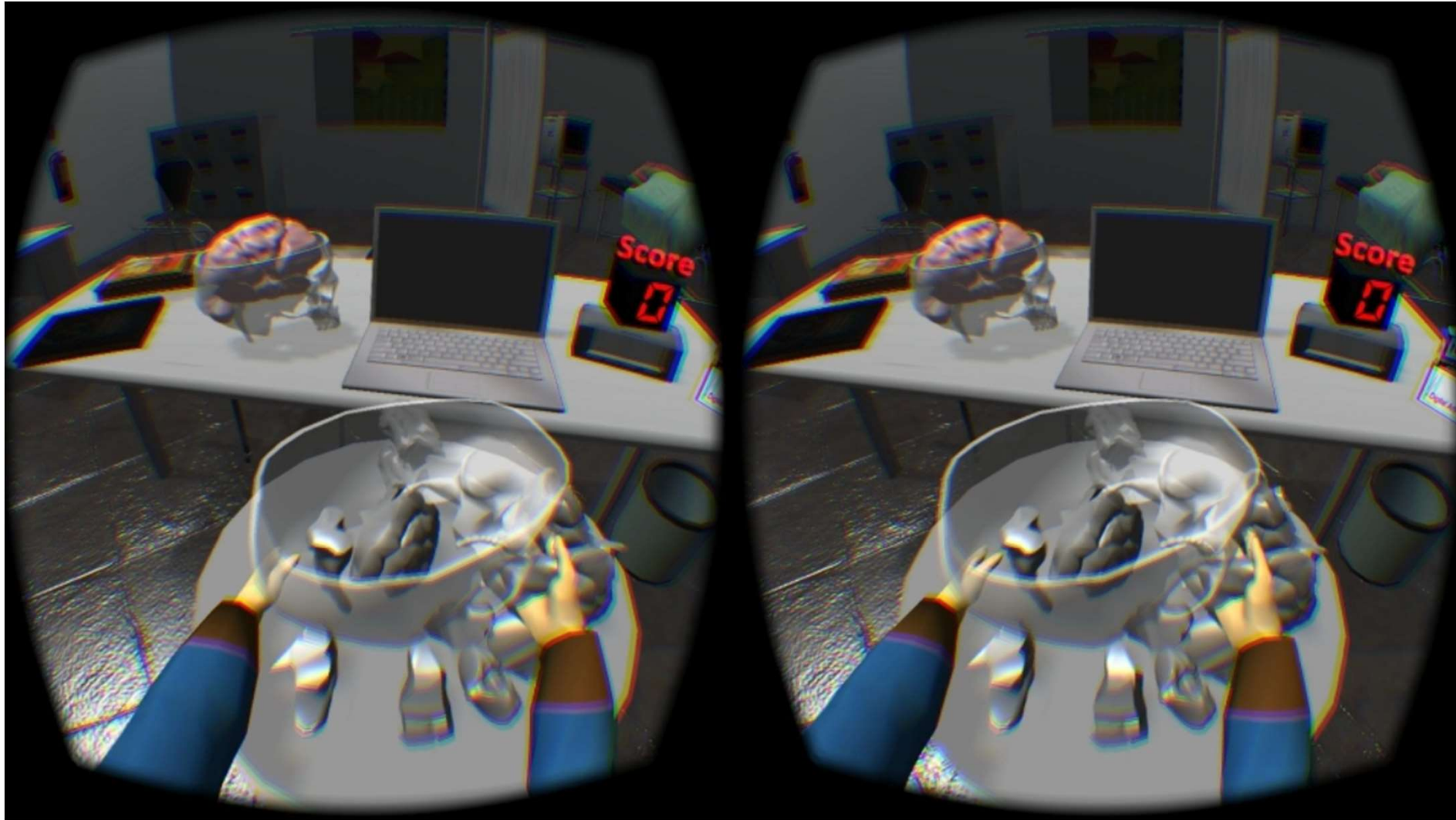


Funding provided by the National Institute of Health

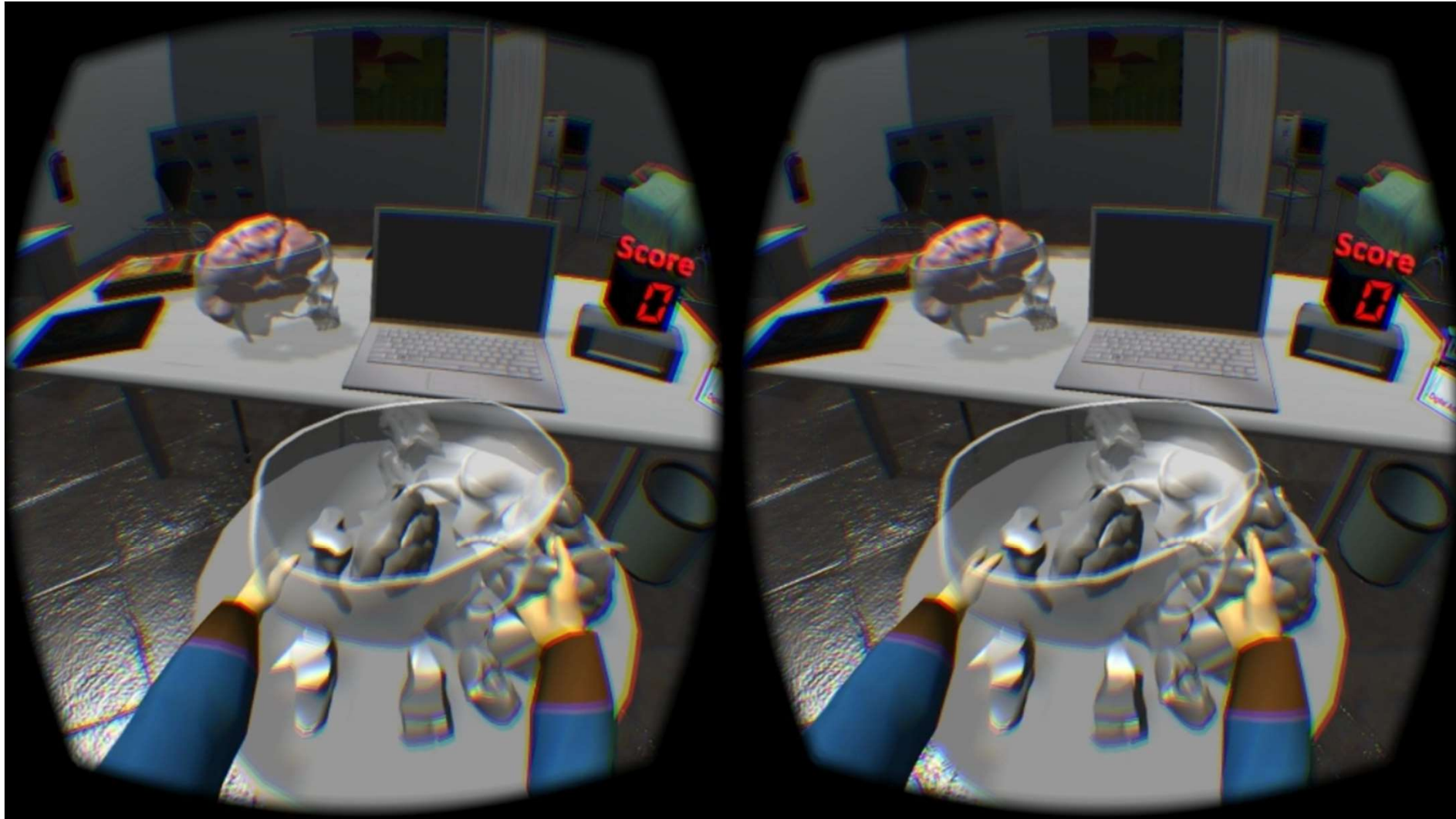
Education



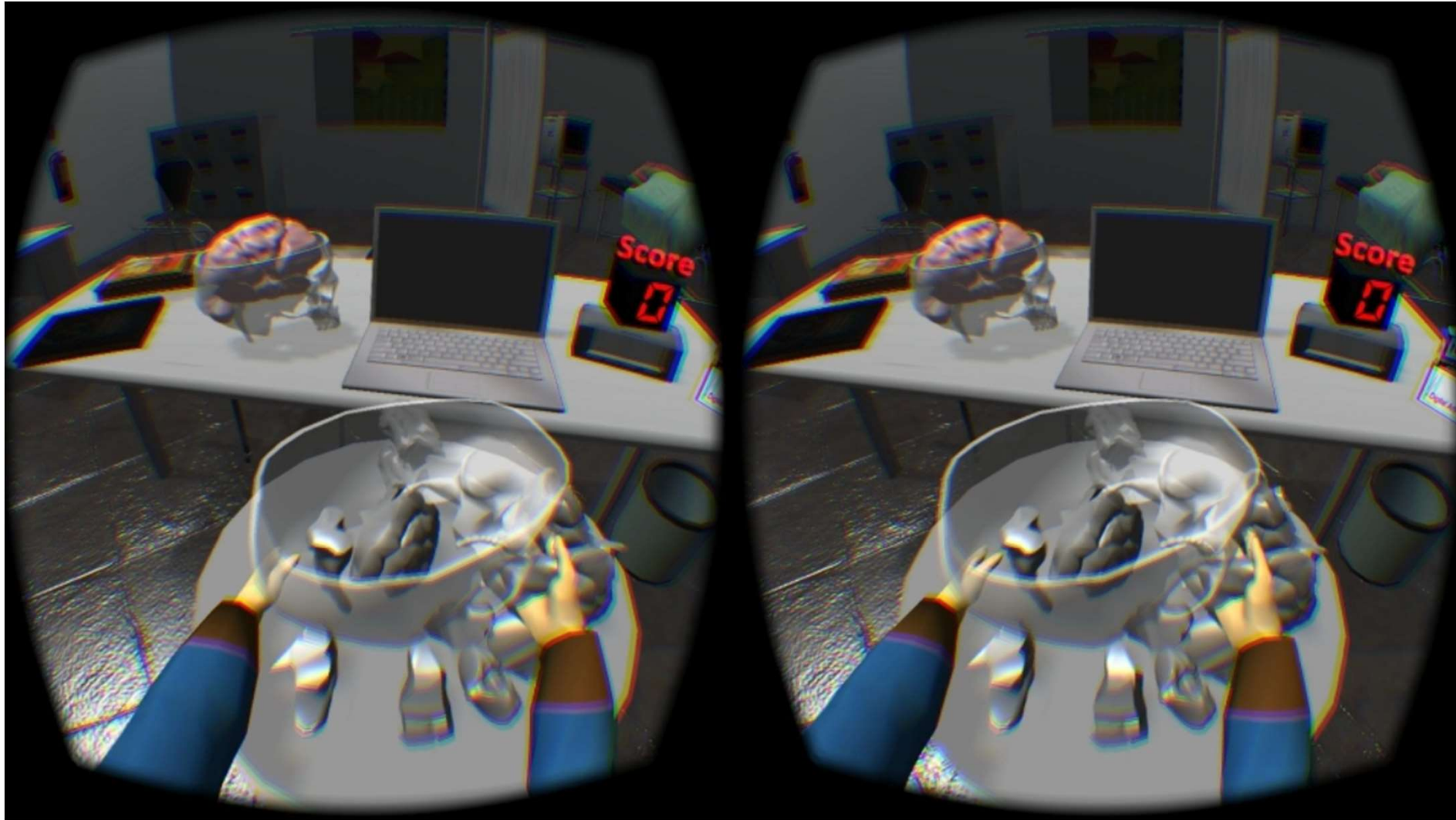
Education



Education



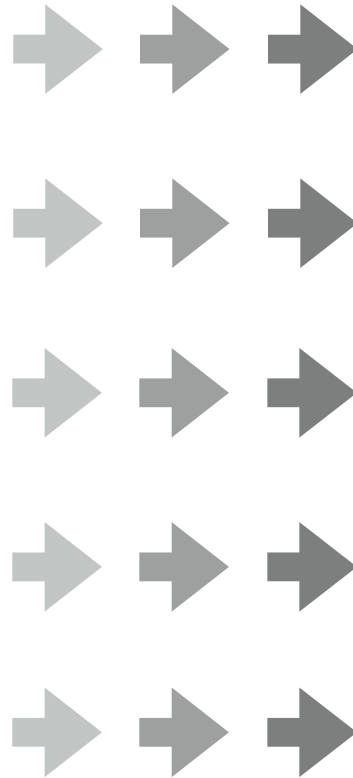
Education



Education

VR Immigrants

Conventional speed
Linear processing
Text first
Step by step
Stand-alone
Passive
Work
Patience
Reality
Technology-as-foe



VR Natives

Twitch speed
Parallel processing
Graphics first
Random access
Connected
Active
Play
Payoff
Fantasy
Technology-as-friend

Education

“The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”

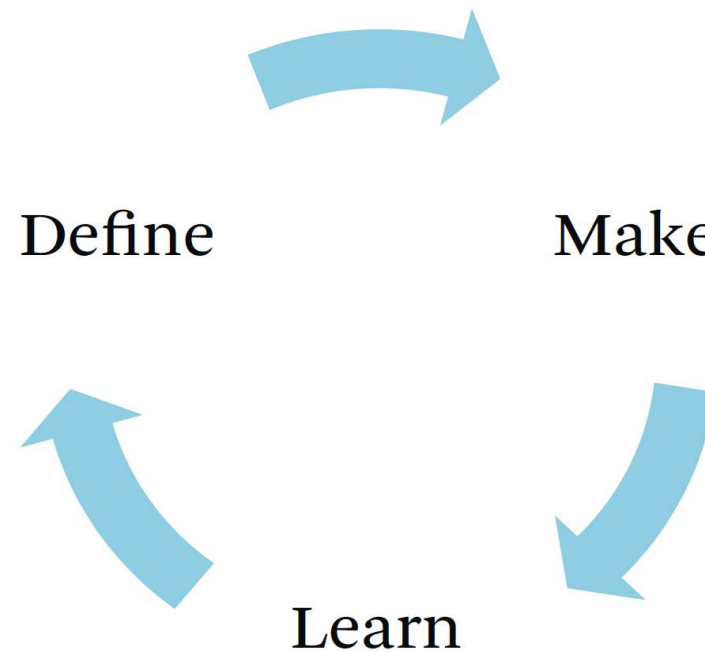
—Alvin Toffler

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What is Common to All VR Apps

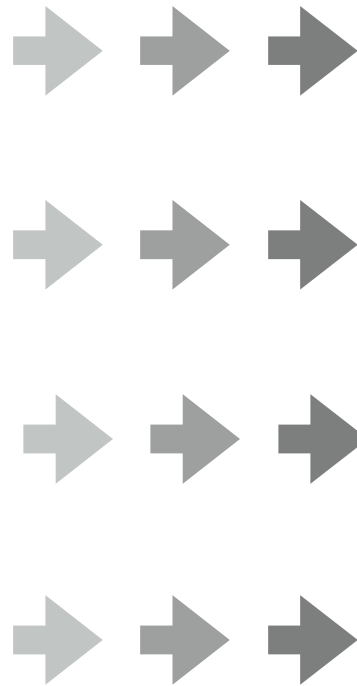
Iteration!



Where is Technology Going?

The Past

Expensive
Dedicated hardware
Train key jobs
Formal
Defense dominates
Experts create
Sequential learning
Accidental engagement



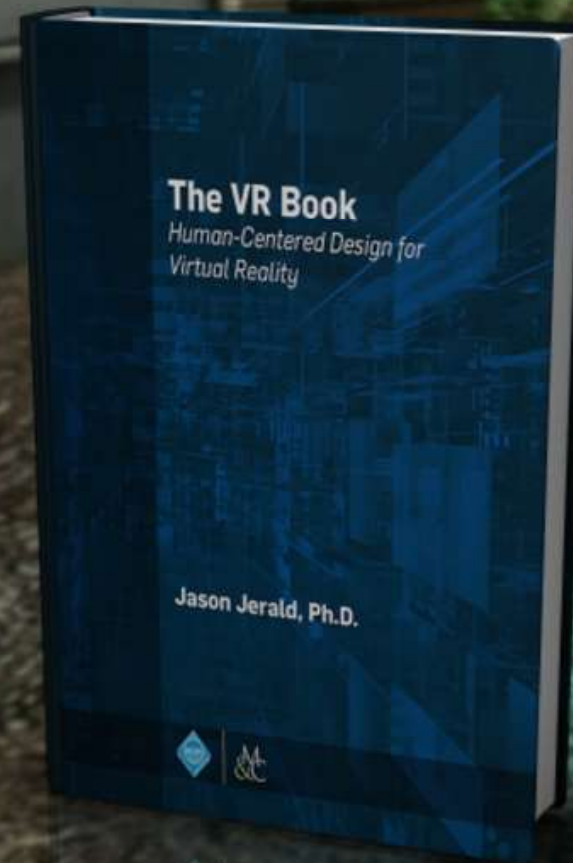
The Future

Inexpensive
Multiuse (e.g., phones)
Train many jobs
Informal
Commercial dominates
Users create
Free-form learning
Intentional Fun

The VR Book

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Questions?

