



IEEE
Metaverse



A Super Cockpit for the Metaverse

...an essential interface for the Metaverse

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Founder
Virtual World Society
10/21/2024

Before 'Virtual Reality': My job...



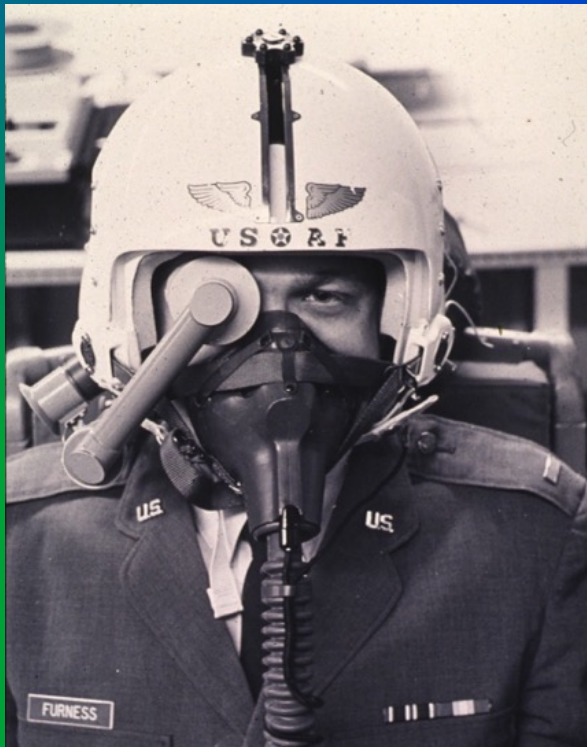
Bandwidth to the brain?

F-16 One Operator for 50 Computers



Solution: *Spatial Cockpit*

Helmet-Mounted Display
(1967)

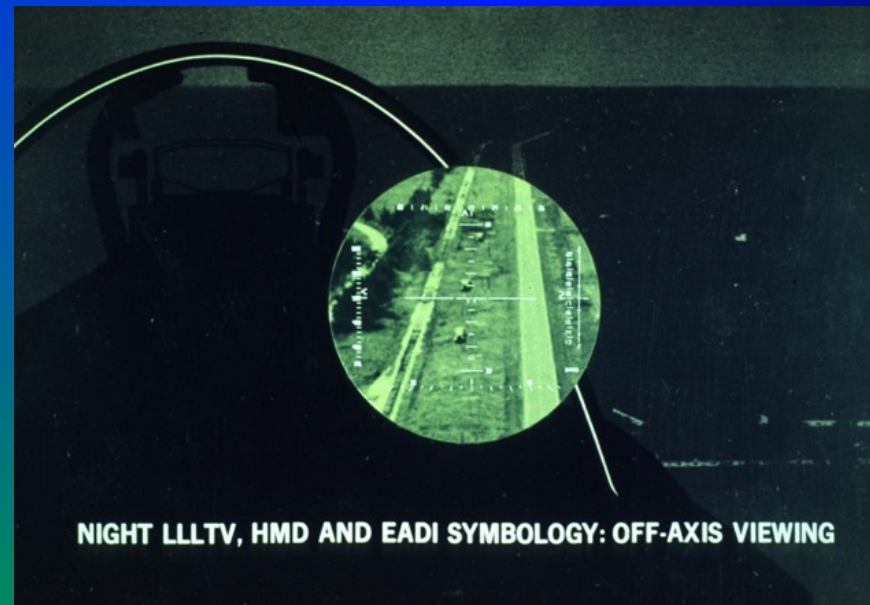


Helmet-Mounted Sight
(1969)



Visually-Coupled System

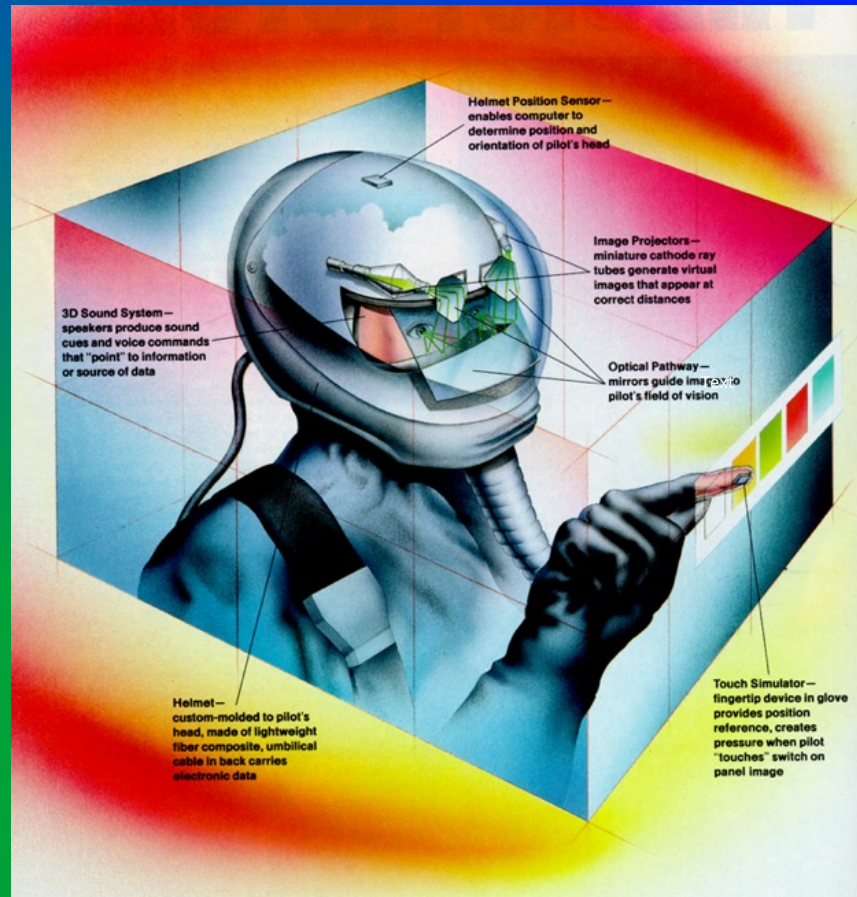
1971



Seeing through the cockpit



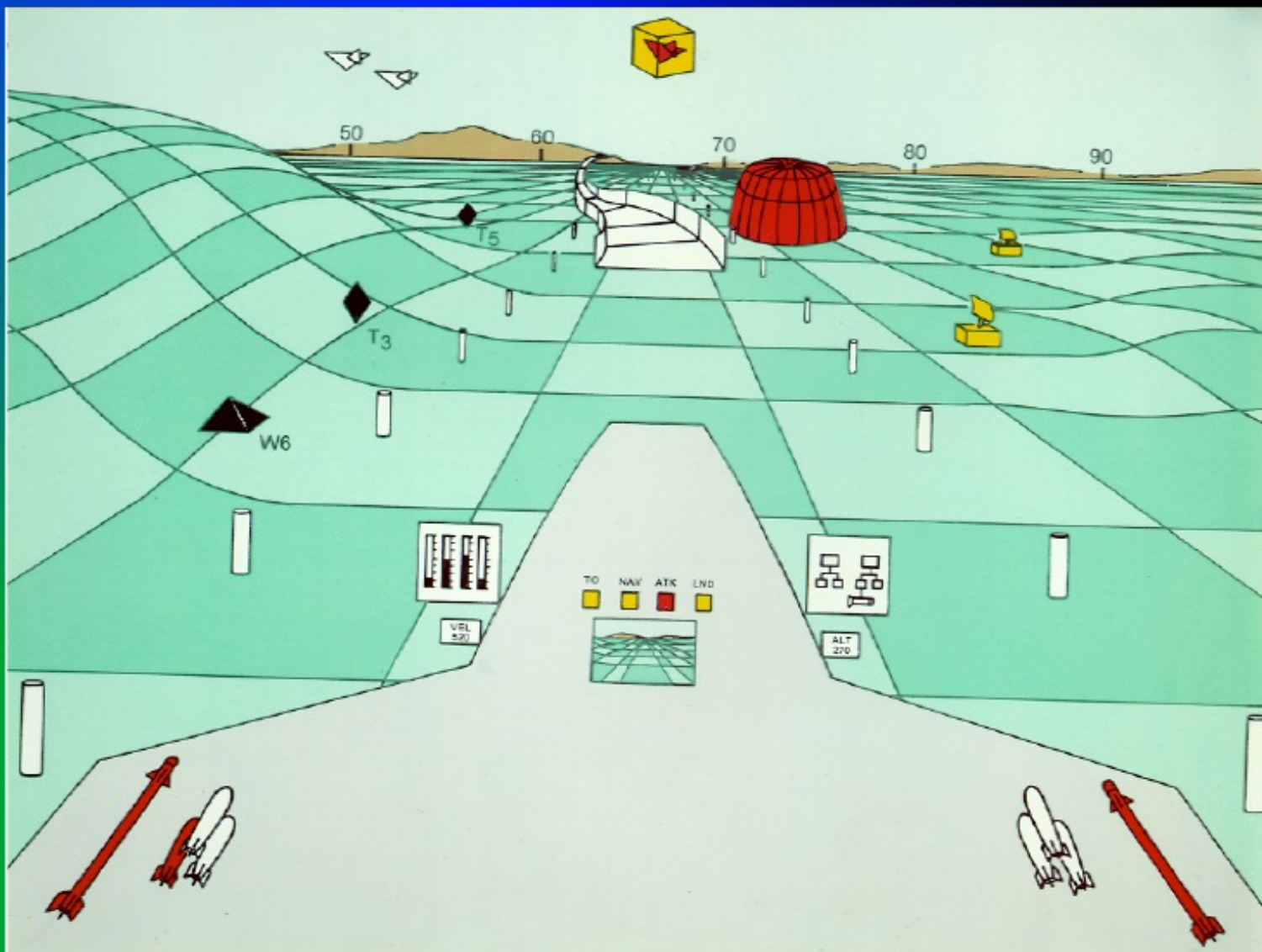
Paradigm Shift: Super Cockpit Concept



Furness
Super Cockpit
1986







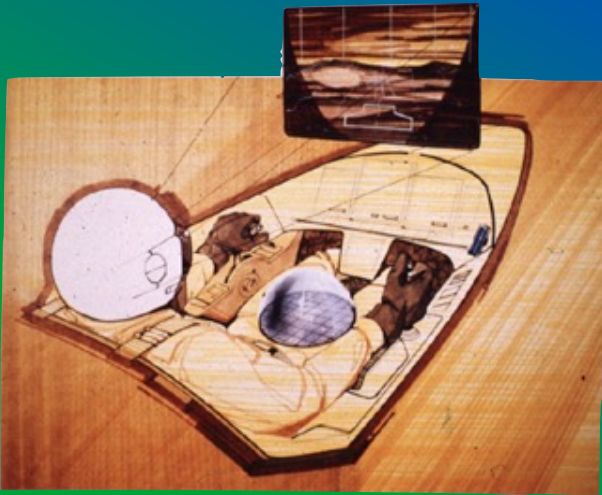


Visually-Coupled Airborne Systems Simulator

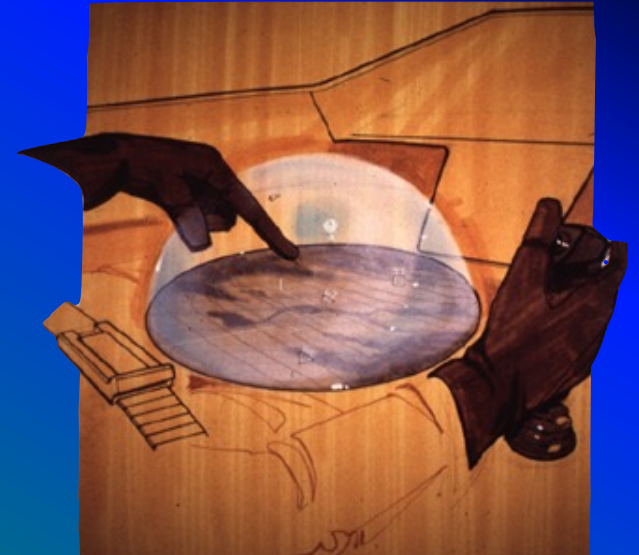
1981

Super Cockpit

Egocentric vs.
Exocentric views



God Eye's
View



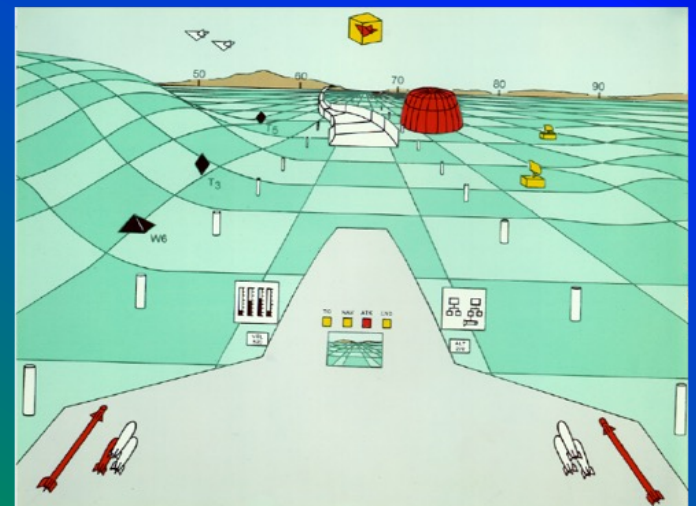
'Darth Vader' Simulator
1981

Pilot



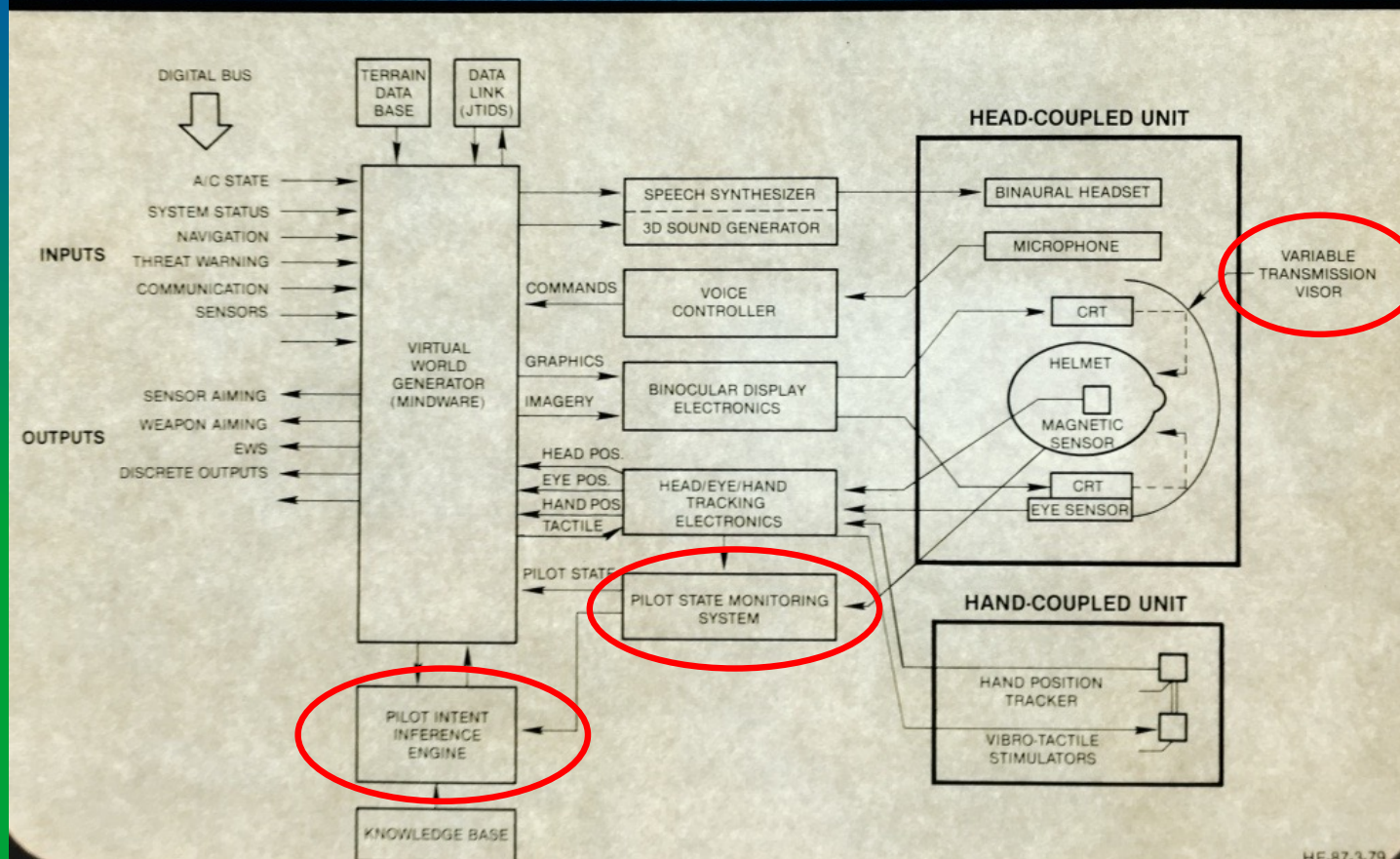
R2D2

Virtual Cockpit





SUPER COCKPIT #3 BLOCK DIAGRAM

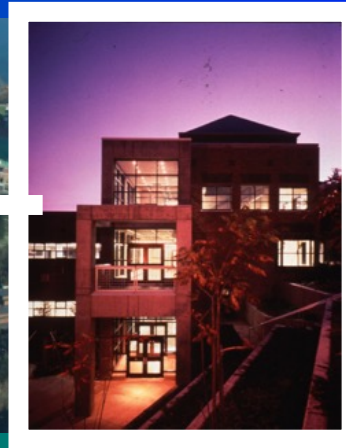


Lessons learned.....Super Cockpit

- Rapid assimilation of information
- Awaken spatial memory
- Never forget
- High bandwidth to the brain
- Immersion & 3D interactivity created *Presence*
- Applications way beyond military
- AR MR VR combined
- Flirting with AI

Swords into Plowshares

1989



Human Interface Technology Laboratory
University of Washington



Personal Eyewear Display

United States Patent [19] US0516282A
 Furness et al. [11] Patent Number: 5,162,828
 [45] Date of Patent: Nov. 10, 1992

[54] DISPLAY SYSTEM FOR A HEAD MOUNTED VIEWING TRANSPARENCY

[76] Inventors: Thomas A. Furness, 4070 Hyland Dr., Dayton, Ohio 45424; Robert E. Fischer, 2060 Hillbury, Westlake Village, Calif. 91362; Peter K. Purdy, 4233 Phinney Ave., N., Seattle, Wash. 98103; Kirk Beach, 2411 24th E., Seattle, Wash. 98112

[21] Appl. No.: 345,886
 [22] Filed: May 1, 1989

Related U.S. Application Data

[63] Continuation-in-part of PCT/US87/02455, Sep. 24, 1987 continuation-in-part of Ser. No. 36,826, Apr. 10, 1987, Pat. No. 4,757,714, which is a continuation-in-part of Ser. No. 911,573, Sep. 25, 1986, Pat. No. 4,722,222.

[51] Int. Cl.³ G02B 24/17
 [52] U.S. Cl. 353/122, 351/158, 359/618

[58] Field of Search 340/705; 351/30-37, 353/122, 101, 14; 350/169-174; 351/158, 119, 120

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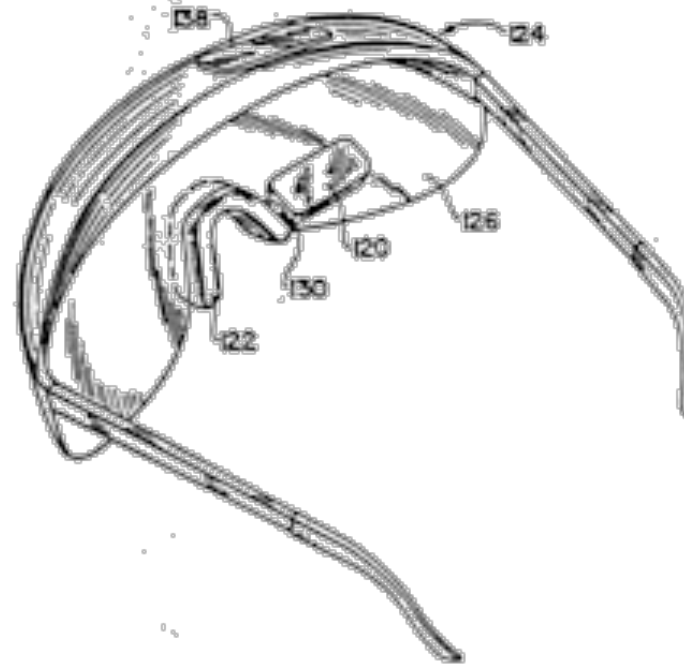
IBM Tech. Disc. Bull., vol. 22, #1, Jun. 1979, projected image display-Leon-Duplays, vol. 2, #3, Oct. 1980, pp. 129-130, Helmet mounted display system etc-Walker et al.

Primary Examiner—Harry N. Haroian
 Attorney, Agent, or Firm—McAndrews, Held & Malloy, Ltd.

[57] ABSTRACT

A display system for conventional eyewear having a transparency that defines a field of view and a frame for supporting the transparency on a user's head is shown. The display system includes a light transmissive display mounted on the frame of the eyewear and optics for collimating light so project an image of the displayed information at a distance from the user in the periphery of the field of view defined by the transparency. The optics may include a single mirror that receives the information directly from the display wherein the mirror is toroidal or the like so as to project an enlarged image at an apparent optical distance from the user that is greater than the actual optical path. Alternatively, a planar mirror may be employed with a collimating lens to project the image at a desired distance from the user. The mirror may be fully reflective or partially reflective so as to superimpose the image of the displayed information on the scene viewed by the user through the transparency of the eyewear. Further, means are provided for automatically adjusting the optical path defined by the relative position of the mirror, the display and the user's eye to accommodate heads of various sizes.

94 Claims, 10 Drawing Sheets



Furness Patent (1992)



Personal Virtual Display

Product



Interface



Display



Eye-multiplexed display



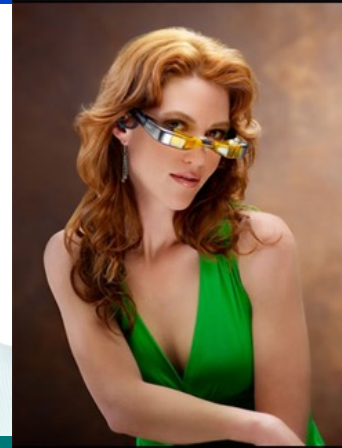
Paradigm Shift: started the rush

Glasstron

eMagin

MyVu

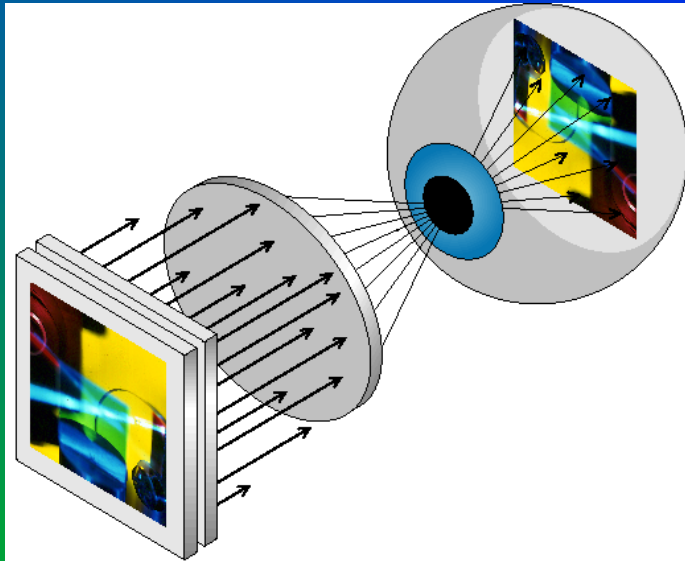
Google Glass



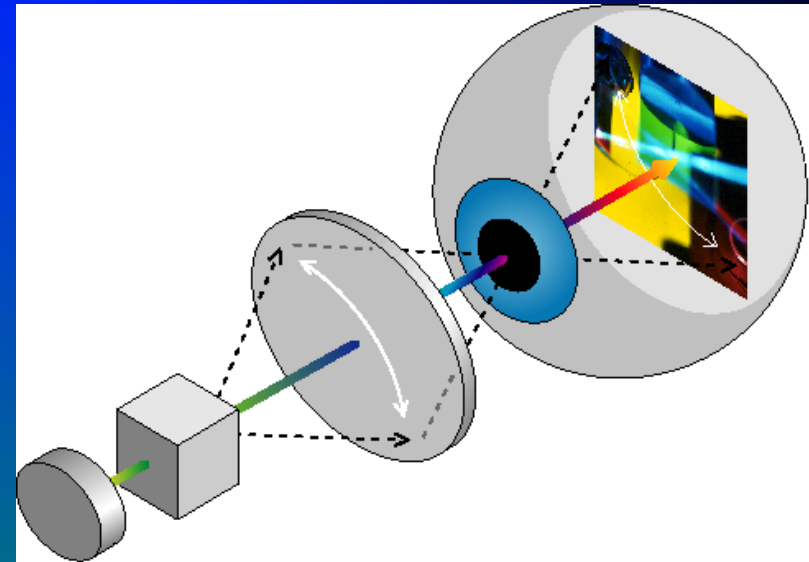
1997 to 2014



Flat Panel vs. Virtual Retina Displays

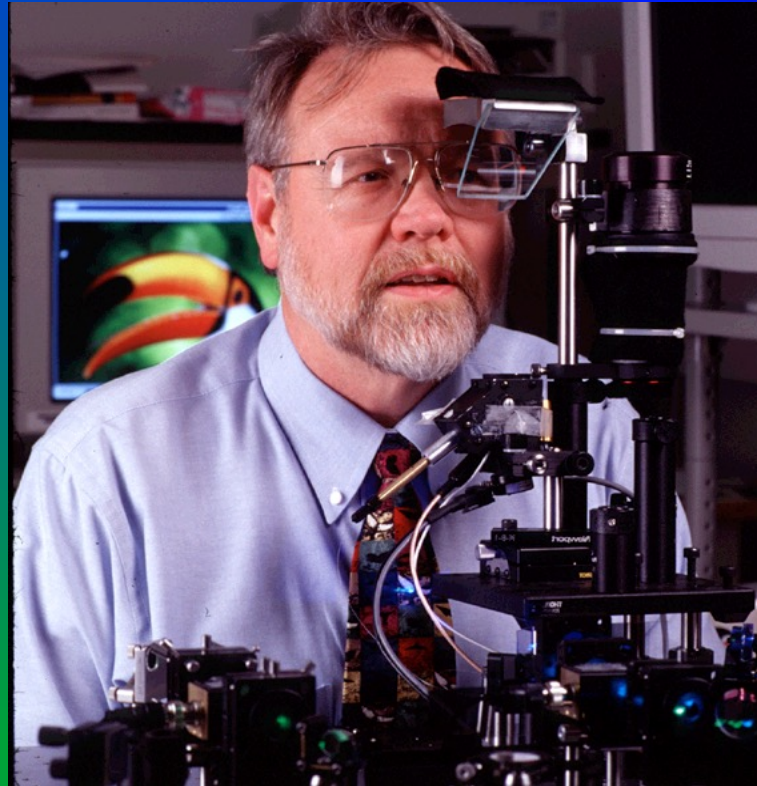


Matrix Element Display
Matrix of 1,000,000 pixels



Virtual Retinal Display
One Pixel

Retinal Light Scanning



Virtual Retinal Display Optical Bench ~ 1994

HIT Lab Lessons Learned (1989 – 2015)

- Generated 300 patents
- Proved the efficacy of XR in medicine, education, design
- Spun Off 27 companies (two traded on NASDAQ Mkt Cap \$10B)
- Educated initial workforce (1000+ graduates)
- Realized a need for a non-profit to guide XR development for humanitarian applications
 - A Peace Corps of XR
 - A National Geographic Society of the mind



...to create a better reality for everyone

1993

2015

But what about the
Metaverse

Reminds me of this...



We need a new
Super Cockpit
for the future
of mankind!



Two aspects of a super cockpit

- **Outward facing** = Super Cockpit for the Metaverse
 - Exploration
 - Navigating
 - Knowledge building
 - Adaptation
 - Intent driven
- **Inward facing** = Super Cockpit for the Mind/Body
 - Health & well being of pilot
 - Expanding motor, sensory, cognitive, emotional, memory spiritual components
 - Grokking
 - How to behold
 - Becoming a transcendent being

Transcendence?

- Transcendence is the process of surpassing ordinary limits, rising above self-centered concerns to achieve a higher state of awareness, understanding, or being. It involves reaching beyond personal, physical, or material existence to connect with something greater, such as universal truths, spiritual enlightenment, or a deeper sense of purpose, often in service to humanity.

SCM Technologies

- Pilot Intent Inference Engine
- Pilot State Monitoring System
- R2D2
- Inconspicuous Displays
- Whole body haptics
- Personal panoramic display workstation
- SCM Operating System
- Omniscient Response Ball
- Flow State Generator
- Mind Bubble Tracker
- Human Energy Management Display
- Breath map
- Kinesthetic ergometer



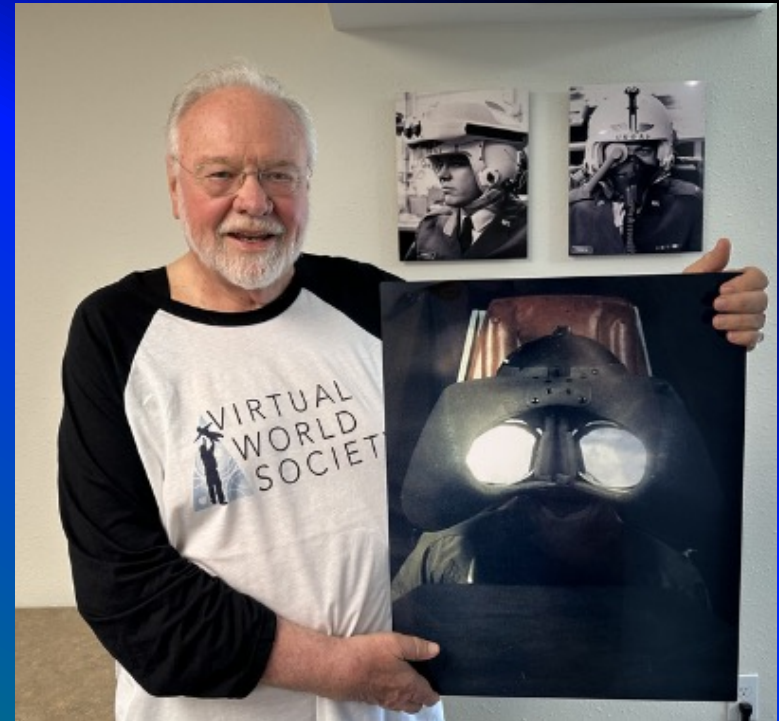
End goal – take the headset off

- The metaverse is a means to an end...not the end itself.
- How are we changed having been in metaverse
 - Enlightened, Lifted, Empowered, Grateful, Full of love for life and our fellow citizens
- We are working to create virtual worlds to make us and our journey better in the real world
- We want to free and educate the human spirit.
- The goal end is *transcendence*.



Call to action

- Join the Virtual World Society
 - (www.virtualworldsociety.org)
- Help use build the Super Cockpit
- Come find me and talk to me.
 - (tom@virtualworldsociety.org)
- Make a significant financial contribution
- Check out the Charity auction on Thursday evening
- Join us to work on HomeSpark and the Super Cockpit projects or on the Science and Ethics Council.





Thanks

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