Pixels at Scale

Organizers

John Owens UC Davis

David Luebke NVIDIA Research

Evolution of Cameras

1995: Fujix Nikon camera

$20,000 1.3 MPixel

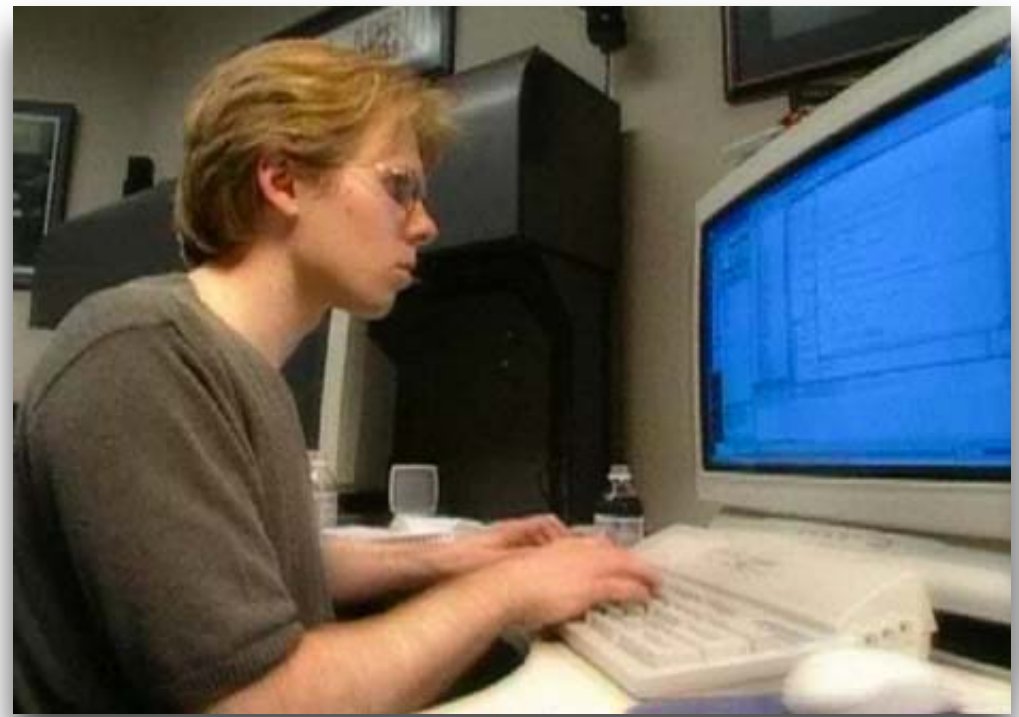
http://petapixel.com/2015/07/17/back-in-1995-a-1mp-pro-digital-camera-cost-20000/

2014: iPhone 6 camera

$17.35 8 MPixel

http://spectrum.ieee.org/static/interactive-apples-and-samsungs-changing-smartphone-recipes

Evolution of Displays



"The InterView 28hd96 Color Monitor is priced at $9,995 (U.S. List) and will be available in May 1997."

2 Samsung 1200x1080 AMOLEDs cost $69 (est. IHS Markit Technology)

http://www.geek.com/games/john-carmack-coded-quake-on-a-28-inch-169-1080p-monitor-in-1995-1422971/
http://www.roadtovr.com/oculus-rift-components-cost-around-200-new-teardown-suggests/

Evolution of GPUs

Nov 2006: GeForce 8800 GTX, $599, 13.8B pixels/s, 345.6 GFLOPS

Aug 2016: GeForce GTX 1080, $599, 136B pixels/s, 8228 GFLOPS

https://twitter.com/g_truc/status/776519712415113217, http://hexus.net/tech/reviews/graphics/7780-xfx-geforce-8800-gtx-768mb-ddr3-xxx-edition/
http://www.laptopsdirect.co.uk/imageupload/showimage.aspx?id=1187089

Why is everybody so excited?

VR could replace screens

AR could replace smartphones

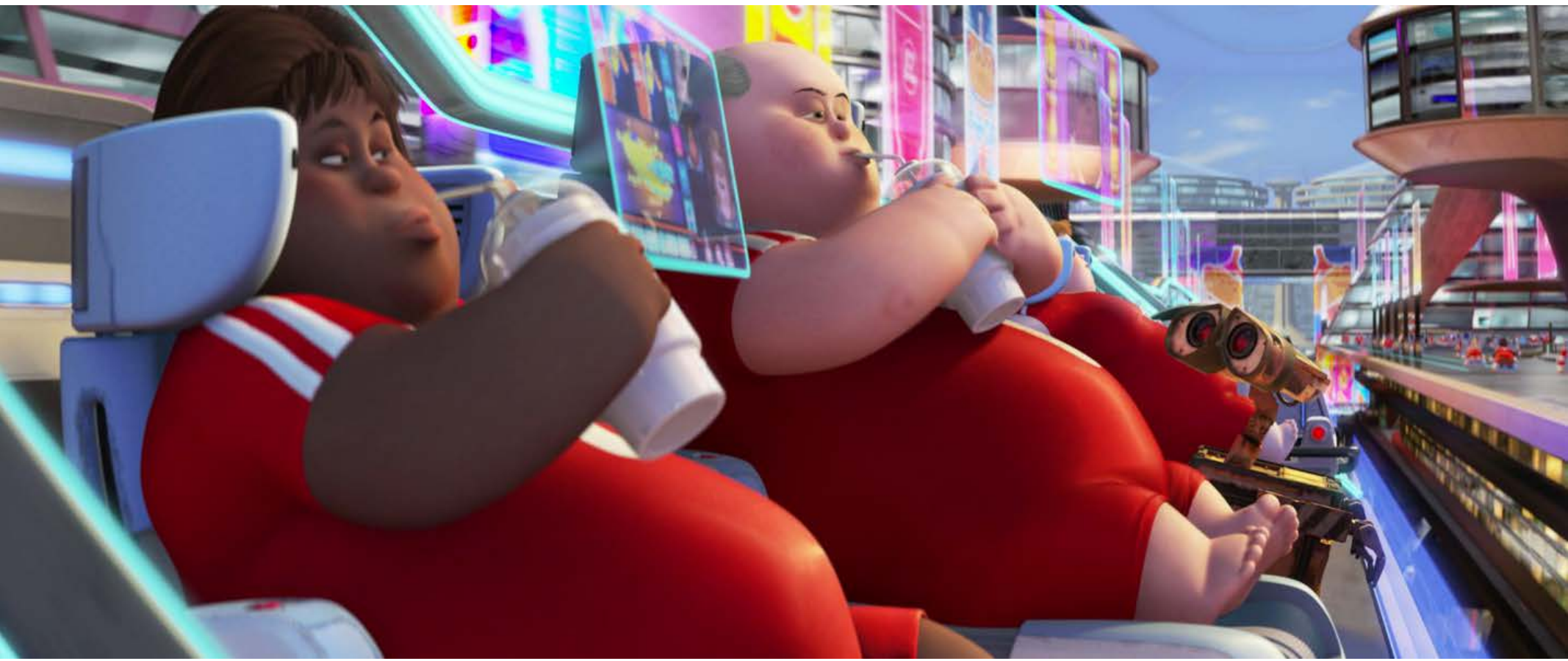
Why is everybody so excited?

Mapping & understanding the world

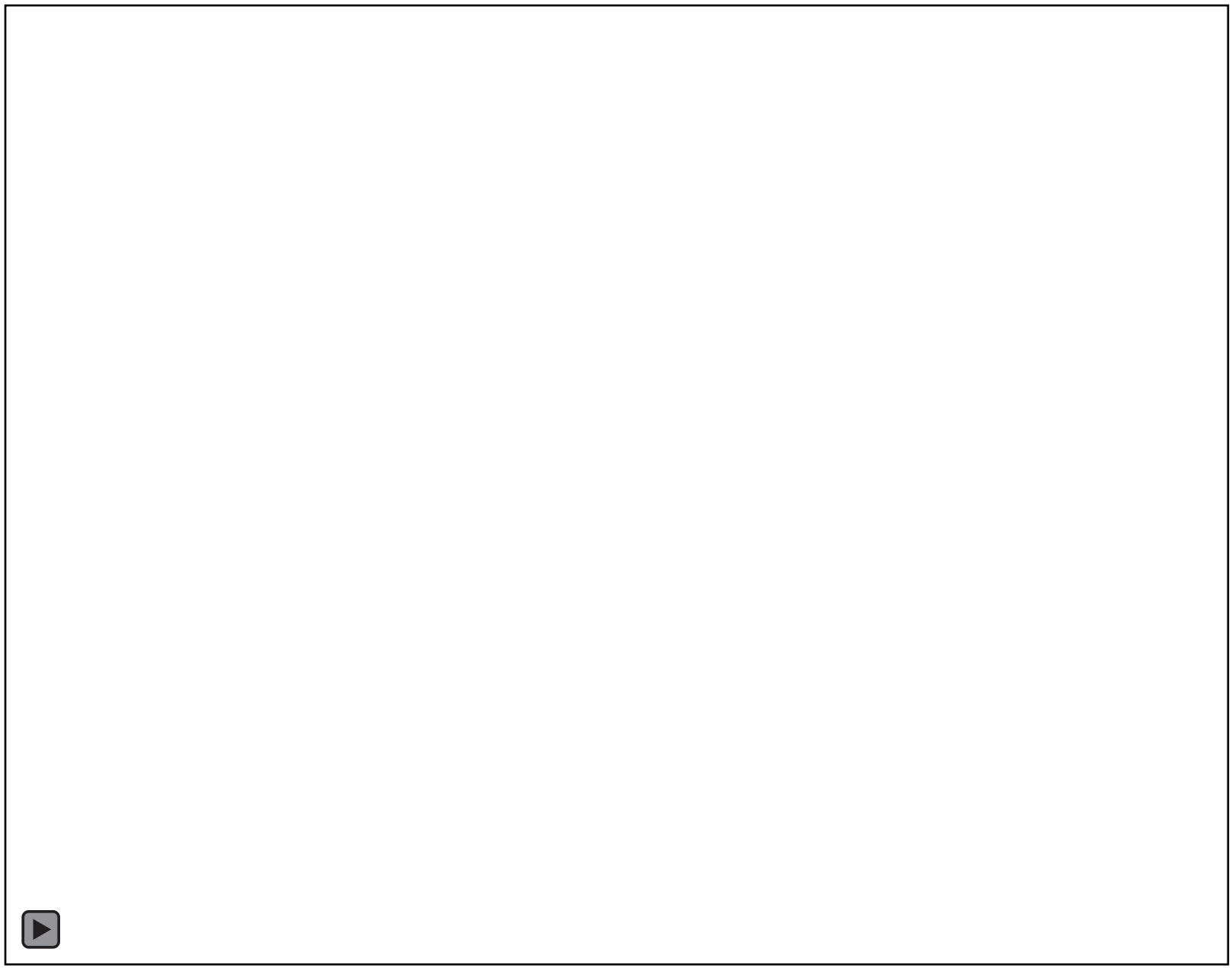
Managing urban areas

Law enforcement

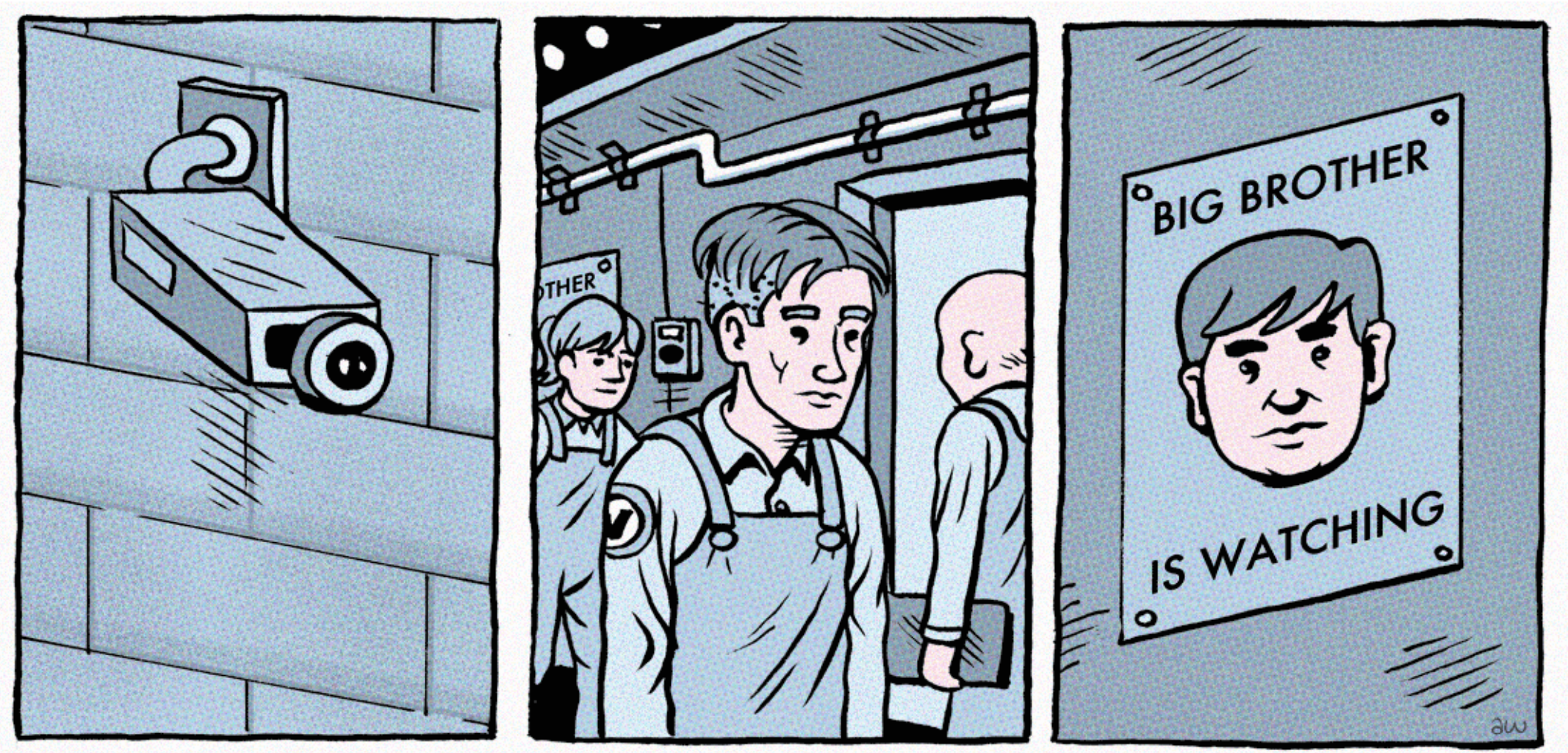
What could go wrong?



What could go wrong?



What could go wrong?



http://www.thedailysheeple.com/wp-content/uploads/2014/03/1984-BigBrother.png

Science fiction is becoming engineering fact

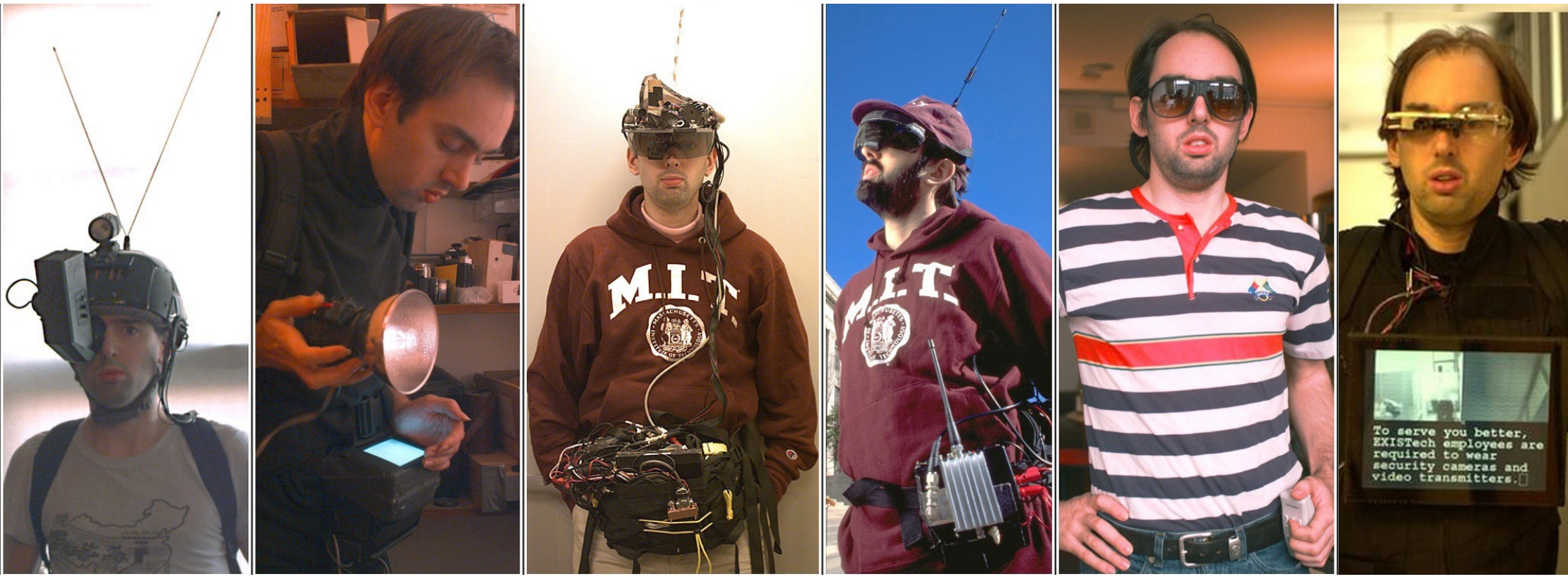
We have an opportunity and
a responsibility to shape the future

Pixels at Scale

Speakers

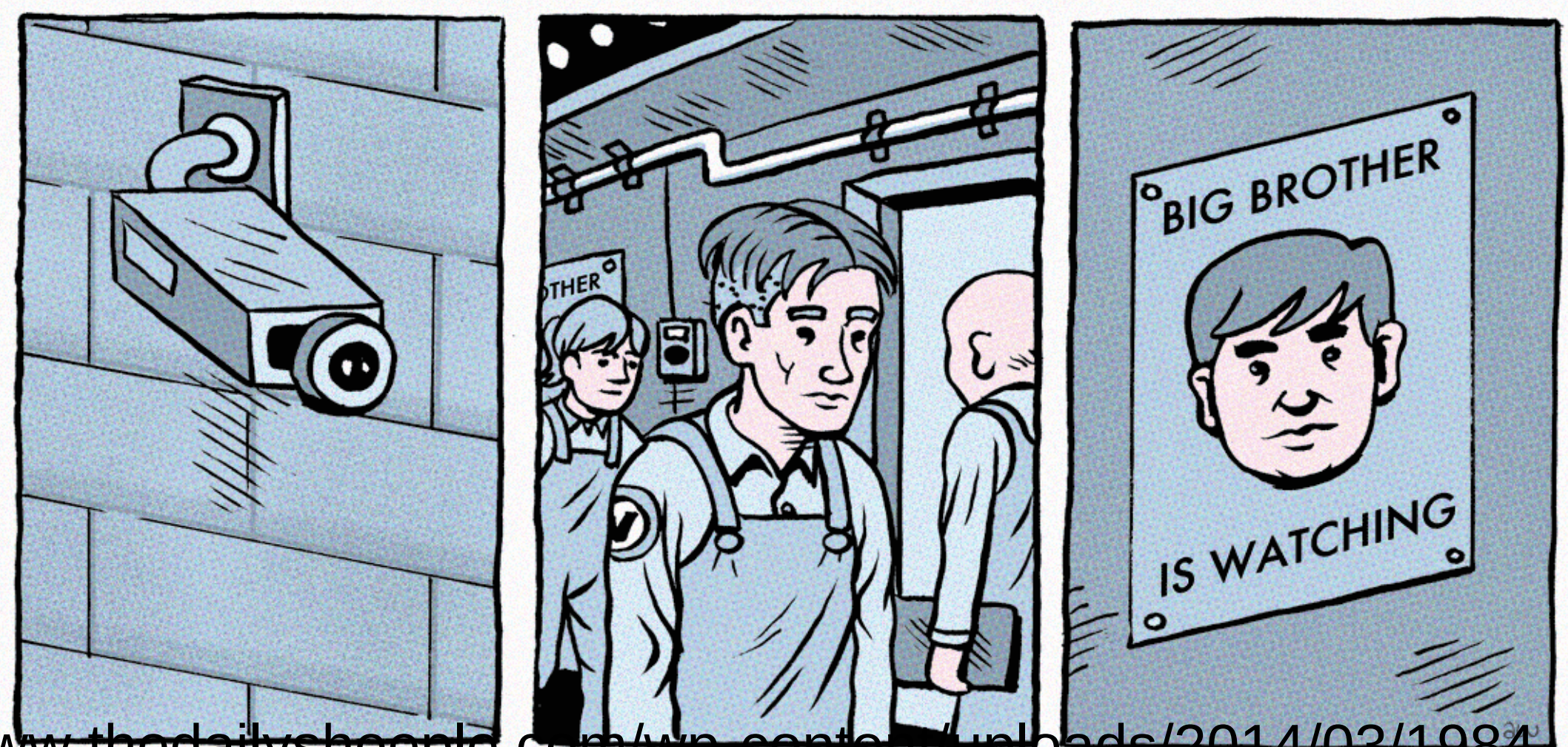
Gordon Wetzstein	Stanford University
Warren Hunt	Oculus Research
Kristen Grauman	University of Texas - Austin
Kayvon Fatahalian	Carnegie Mellon University

Technology Advances Enable Innovation



Self-portraits of Steve Mann, University of Toronto, with "Digital Eye Glass" (wearable computer and Augmediated Reality systems) from 1980s to 2000s.

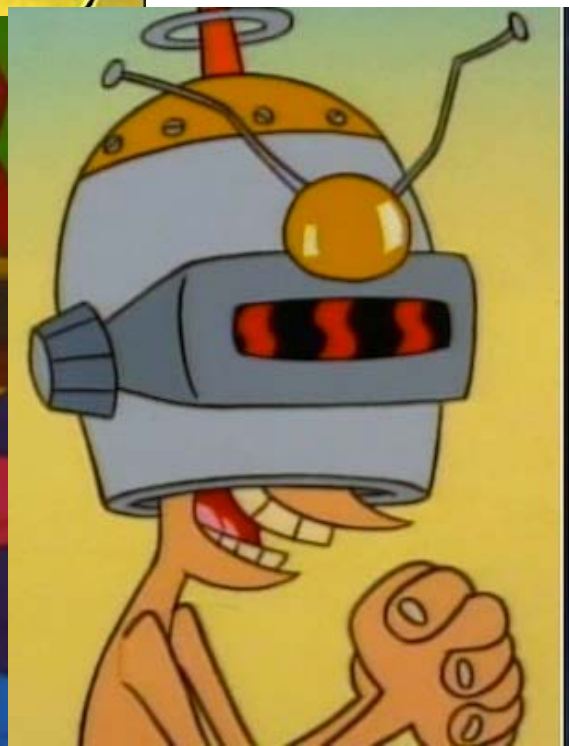
random stuff that won’t make it into the talk



ww.thedailysheeple.com/wp-content/uploads/2014/03/1984-BigBrother.png

https://www.youtube.com/watch?v=ODrDR9D28RE


uff! Duff!



One experiment at Carnegie Mellon took real-time videos of students on campus and was able to identify one-third of them by comparing their photos with publicly available tagged Facebook photos.

—Bruce Schneier, “The Internet is a surveillance state”, special to CNN, 16 March 2013
http://www.cnn.com/2013/03/16/opinion/schneier-internet-surveillance

Journal of Privacy and Confidentiality (2014) **6**, Number 2, 1–20

Face Recognition and Privacy in the Age of Augmented Reality

Alessandro Acquisti*, Ralph Gross†, and Fred Stutzman‡

In 1997, the best computer face recognizer in the US Department of Defense's Face Recognition Technology program scored an error rate of 0.54 (the false reject rate at a false accept rate of 1 in 1,000). By 2006, the best recognizer scored 0.026 [1]. By 2010, the best recognizer scored 0.003 [2]—an improvement of more than two orders of magnitude in just over 10 years.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LIVE

http://genesisaugmented.com/beta