AR Studio

Creating opportunities for multimodal layered learning through augmented reality

UNIVERSITY OF CANBERRA
AUSTRALIA'S CAPITAL UNIVERSITY

ANU
THE AUSTRALIAN NATIONAL UNIVERSITY

MACQUARIE UNIVERSITY

INSPIRE

Office for Learning and Teaching Innovation and Development Grant, OCT 2011-13

Support for the production of this website has been provided by the Australian Government Office for Learning and Teaching.

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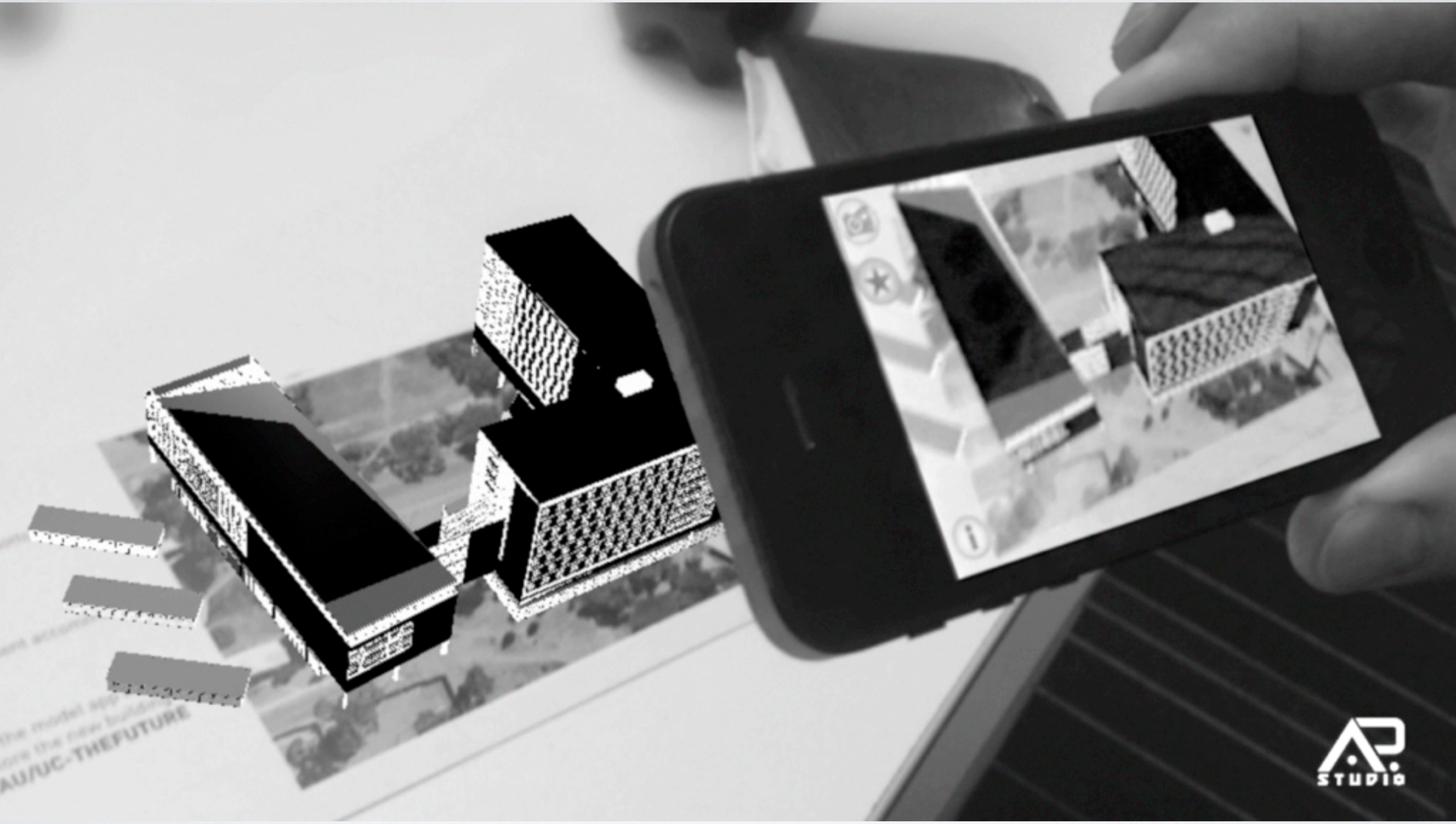
STUDIO
projects



http://vimeo.com/67261399

TECHNOLOGY
augmented reality

- Position paper
  Munnerley, D., Bacon, M., Wilson, A., Steele, J., Hedberg, J., & Fitzgerald, R. (2012). Confronting an augmented reality. Research In Learning Technology, 20. doi:10.3402/rlt.v20i0.19189
- Mobile app development
  ARstudio and ARstudioEdu for IOS & Android (1200+ downloads, 50 countries)
- Educational practice models & use cases
  Co-developed with partners, colleagues and workshop participants
- Analytics
  Gathered data to monitor uptake of apps
- AR in Higher Education (eBook)
  Project ARchive including documentation and guidelines, use cases, models and project history (launch Dec 2013)

PROCESS
studio

- Supported studio
  Located at the INSPIRE centre, University of Canberra
- Distributed sustainability
  Connected & cooperative partnership projects with diverse groups
- Project Seeding
  - *AR Camps, 2012&13*
    Two day un-conference, 120+ academics, teachers, students and industry partners developing AR at the INSPIRE studio
  - *Workshop programme*
    16 workshops delivered throughout Australia and overseas, designed using service design and design thinking approaches (300+ participants)
- Industry partnerships
  Mob Labs, Aurasma, Metaio
- Clustered research
  Co-location with other research project teams and collaboration with Virgina Tech in the US (advisory group)

TECHNOLOGY
defining augmented reality

"real-time views of a physical, real-world environment whose elements have been augmented, enhanced, enriched or diminished by computer-generated sensory input, such as sound or graphics as a layer or projection."

(Munnerley et al, 2012)

"Augmented reality (AR) is a live, direct or indirect, view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data."

(Wikipedia, 2012)

"real-time views of a physical, real-world environment whose elements have been augmented, enhanced or enriched by computer-generated sensory input, such as sound or graphics."

(Azuma, R. 1997)

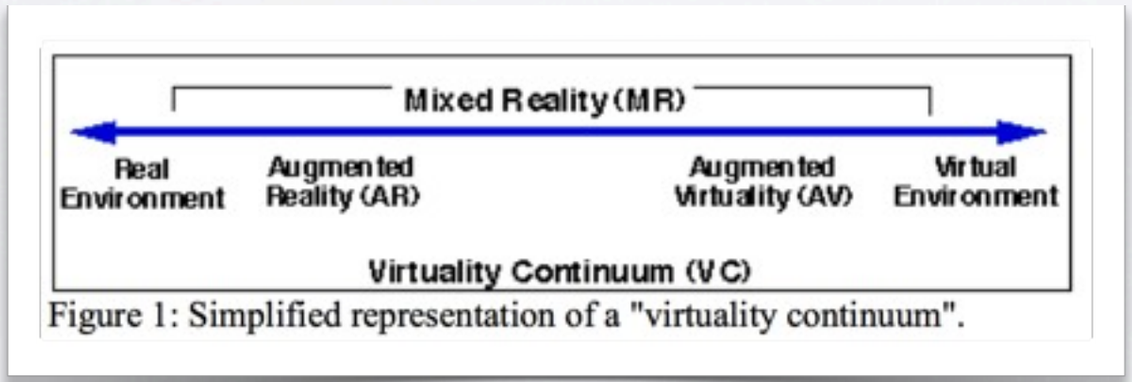
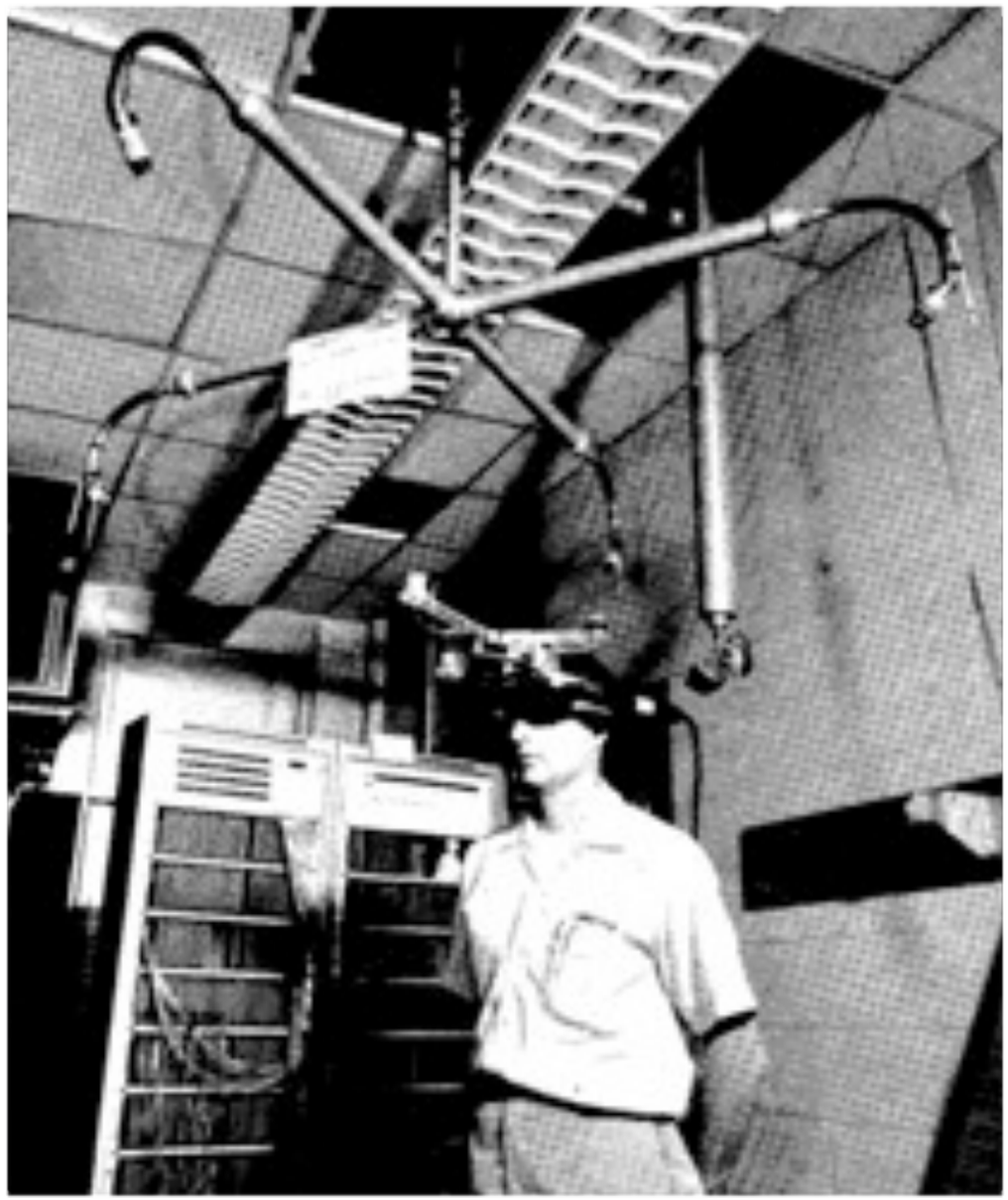


Figure 1: Simplified representation of a "virtuality continuum".

(Milgram & Kishino, 1994)

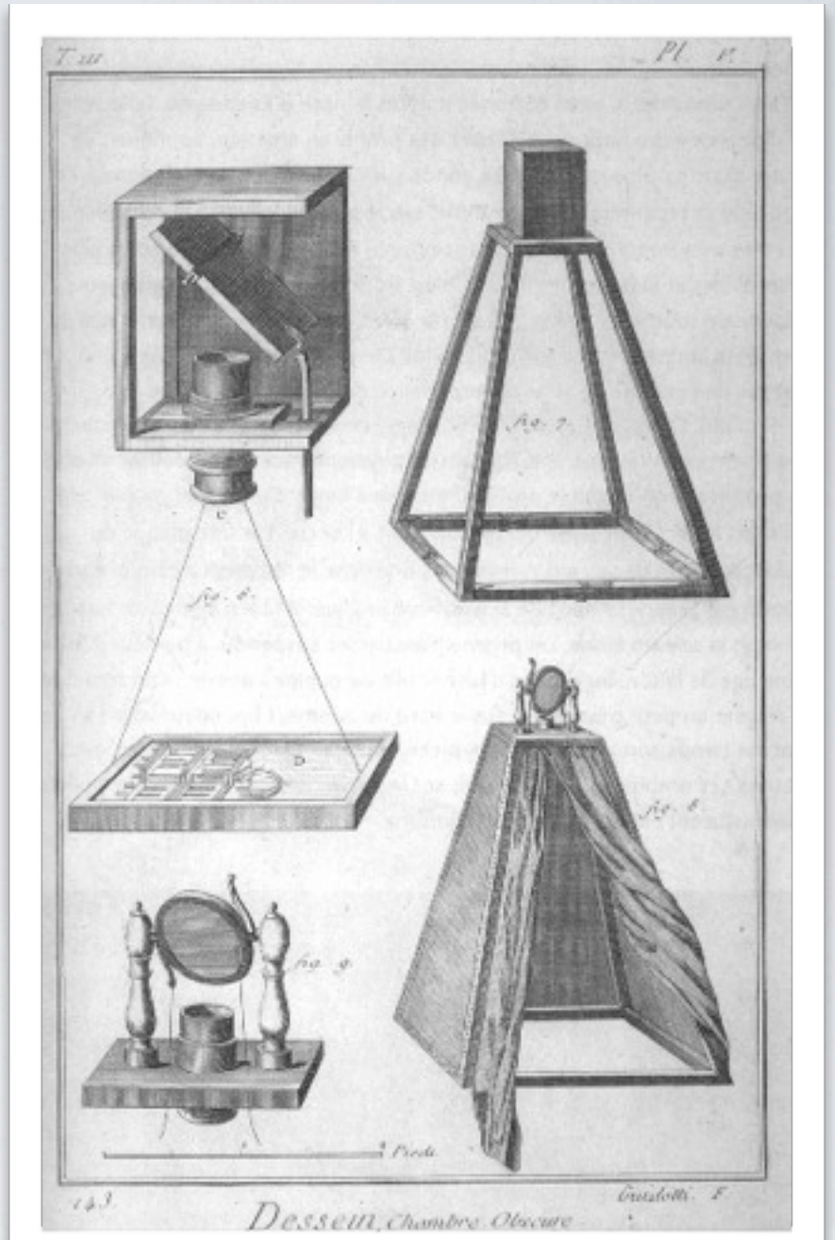


(Sutherland, I. 1968) A head-mounted three dimensional display. pg 757-764

(Helig, M. 1962) The Sensorama, U.S. Patent #3050870

TECHNOLOGY
mixed reality histories

Claude Glass, 1778 (Claude Lorrain)
'the view could sell for 1000 pounds...if only one could fix the image!'
Thomas Gray (poet)

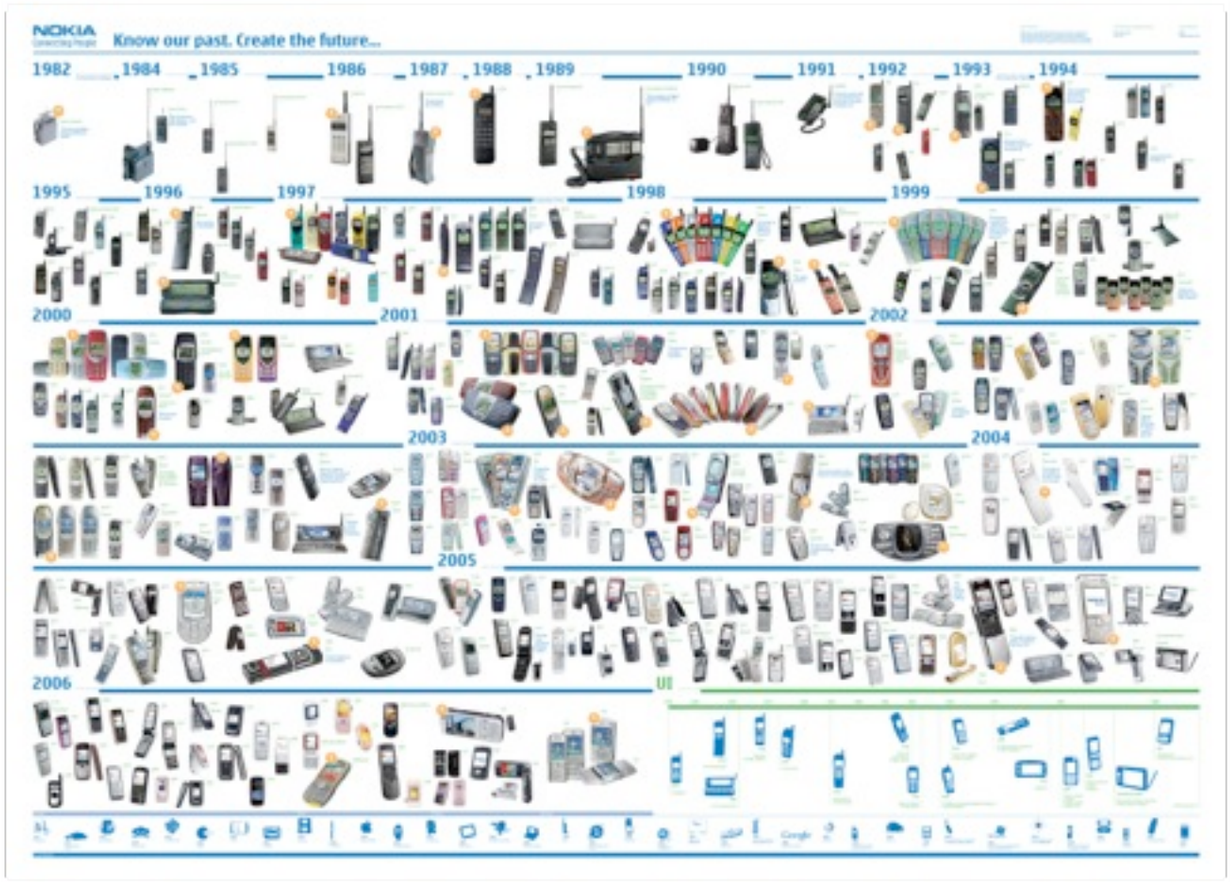


Camera Obscura,
Aristotle to Daguerre, 384BC-1826

TECHNOLOGY
why now?

Miniaturisation

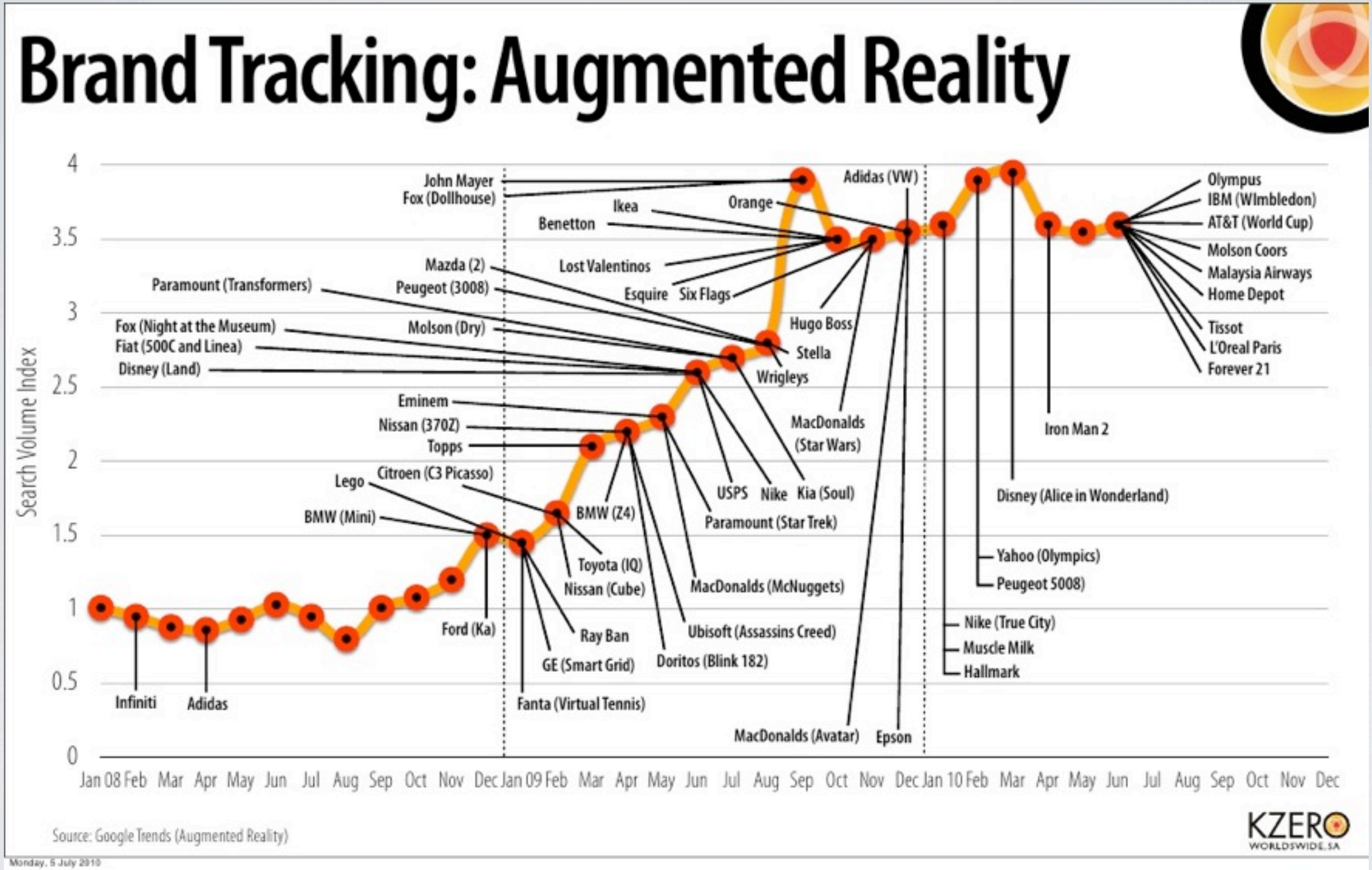
Mobile Evolution by Kyle Dean



Massification

Nokia timeline, (legacy map)

Brand Tracking: Augmented Reality

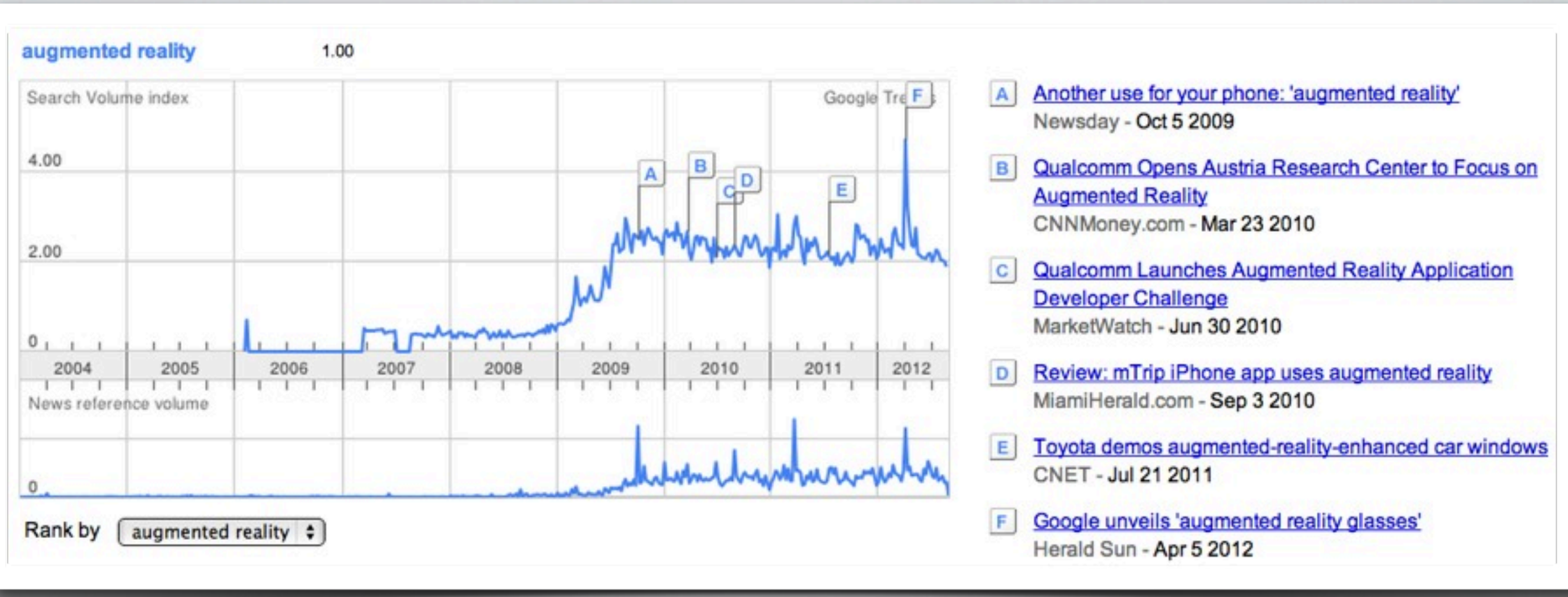


Source: Google Trends (Augmented Reality)

KZERO WORLDSWIDE.SA

Monday, 5 July 2010

google trends 2004-12



A Another use for your phone: 'augmented reality'
Newsday - **Oct 5 2009**

B Qualcomm Opens Austria Research Center to Focus on Augmented Reality
CNNMoney.com - **Mar 23 2010**

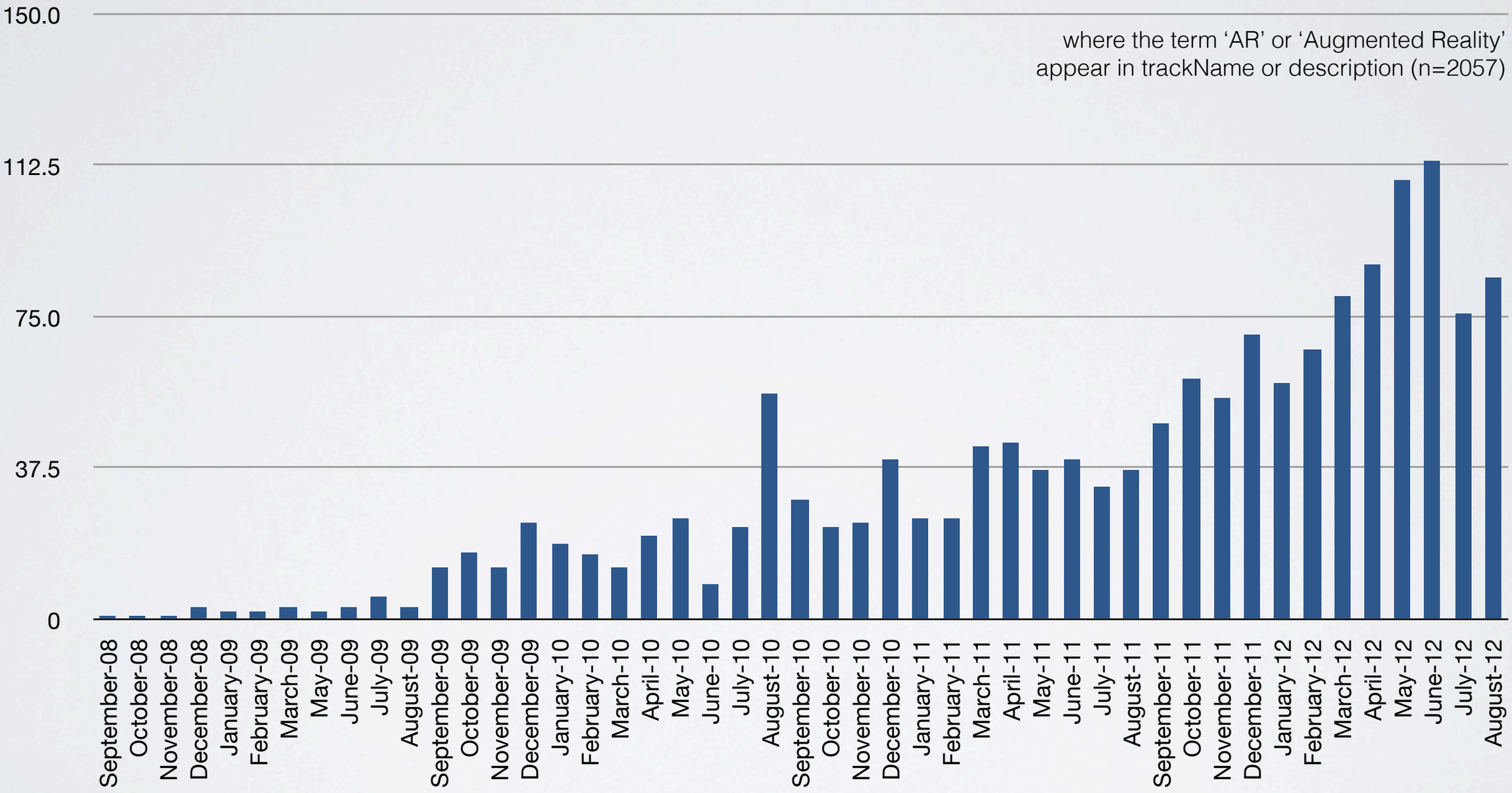
C Qualcomm Launches Augmented Reality Application Developer Challenge
MarketWatch - **Jun 30 2010**

D Review: mTrip iPhone app uses augmented reality
MiamiHerald.com - **Sep 3 2010**

E Toyota demos augmented-reality-enhanced car windows
CNET - **Jul 21 2011**

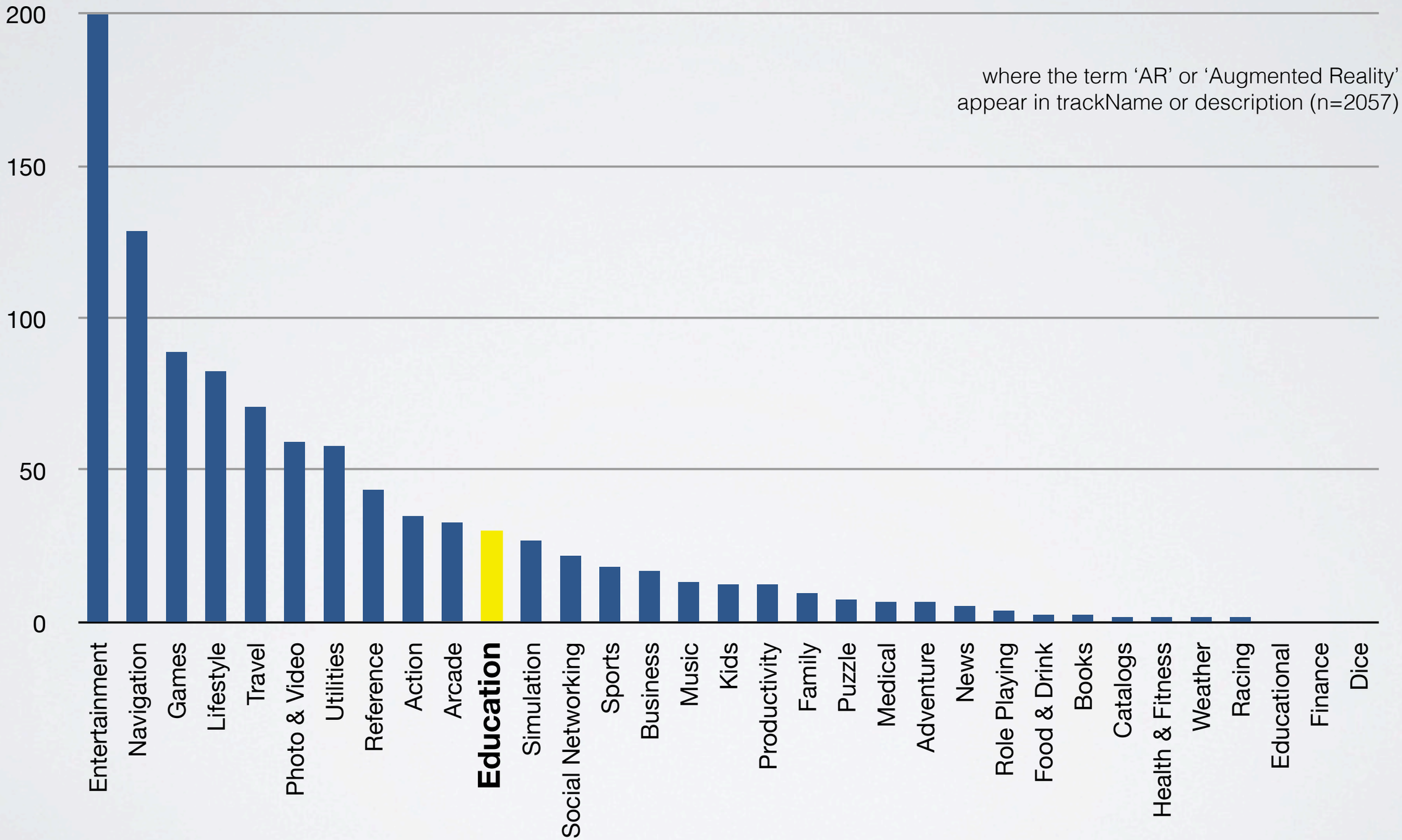
F Google unveils 'augmented reality glasses'
Herald Sun - **Apr 5 2012**

number of apps by release date (iTunes store)



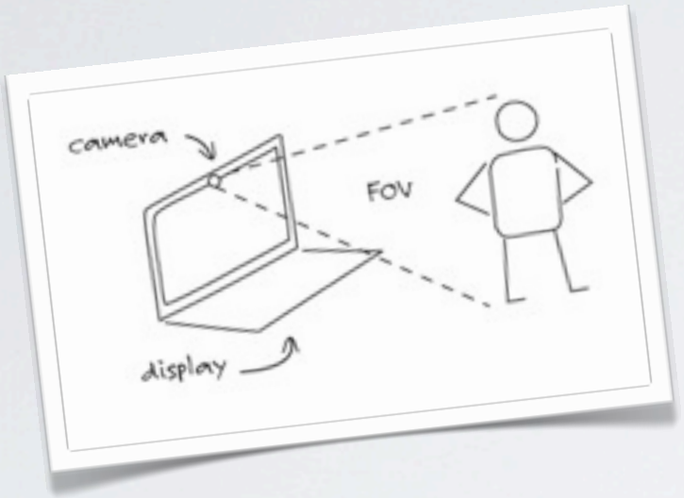
(Munnerley, D. Krix, P. 2012) created 24/08/12

TECHNOLOGY
apps by genre (iTunes store)

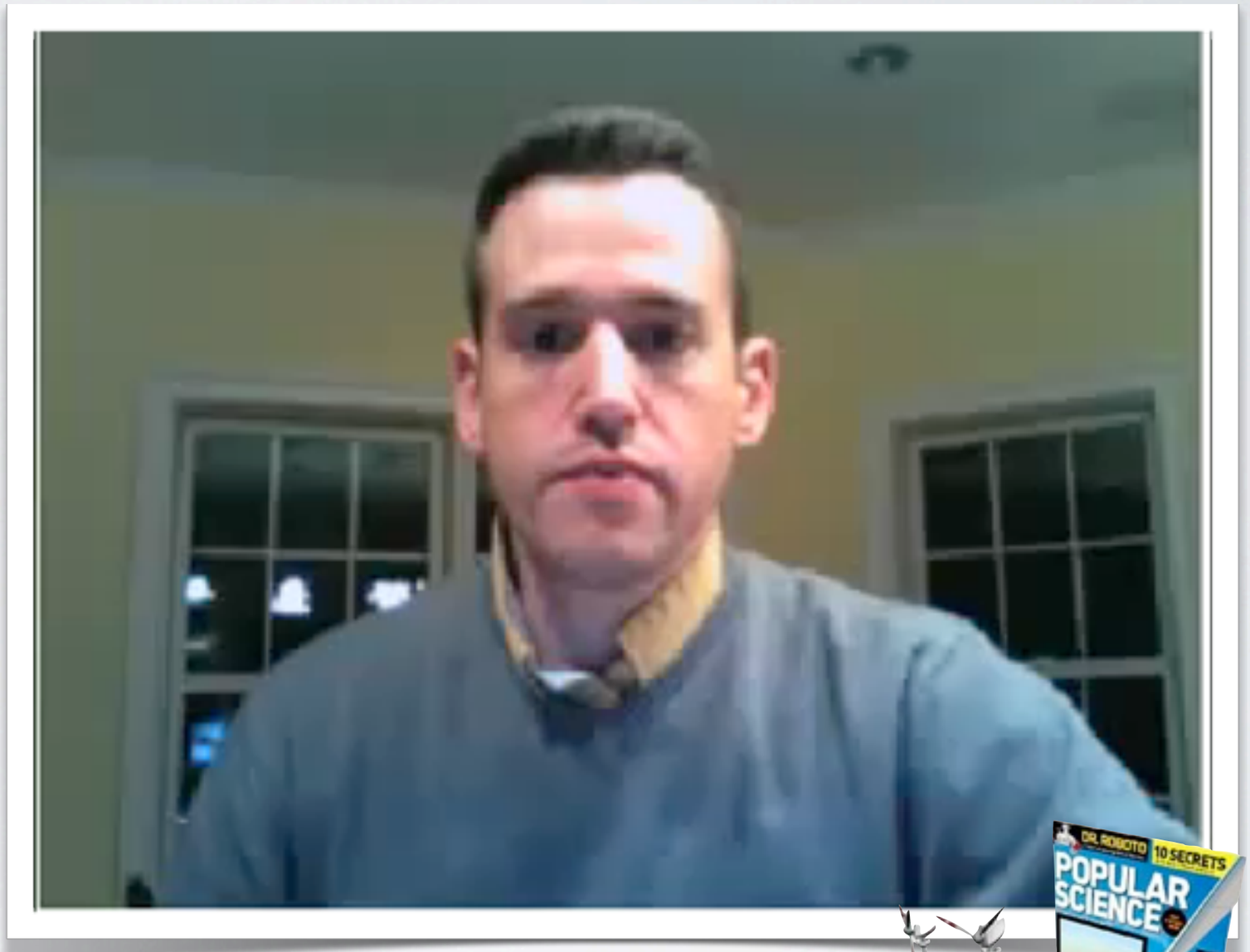


(Munnerley, D. Krix, P. 2012) created 24/08/12

CASE STUDIES
Popular science magazine

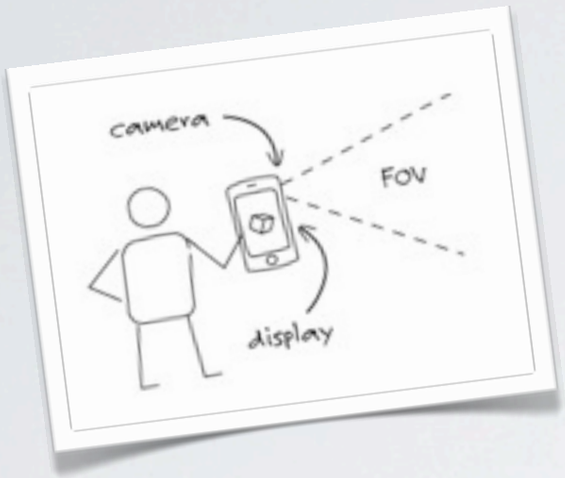


- Jun 2009
- Type: Intimate
- Tech: Fiducial marker, Flash & ARToolkit
- Theme: simulate, promote, inform



http://www.youtube.com/watch?v=5fGav7FI5P4

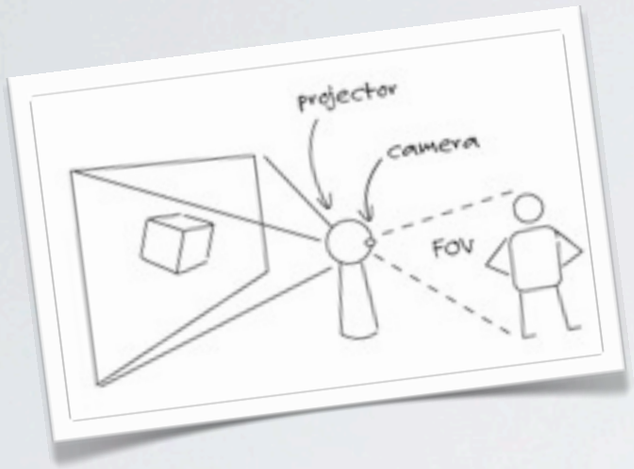
CASE STUDIES
MOMA art hijack (manifest.ar)



- Oct 2010
- Type: personal
- Tech: Flash & ARToolkit
- Theme: hi-jack, confront

http://www.youtube.com/watch?v=b9T2LVM7ynM

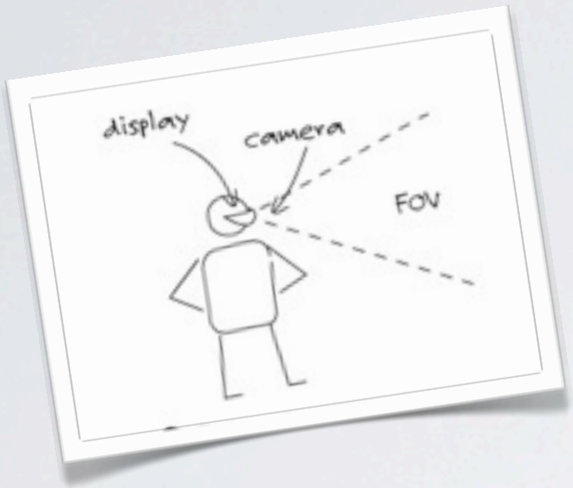
CASE STUDIES
NSW Australia tourism



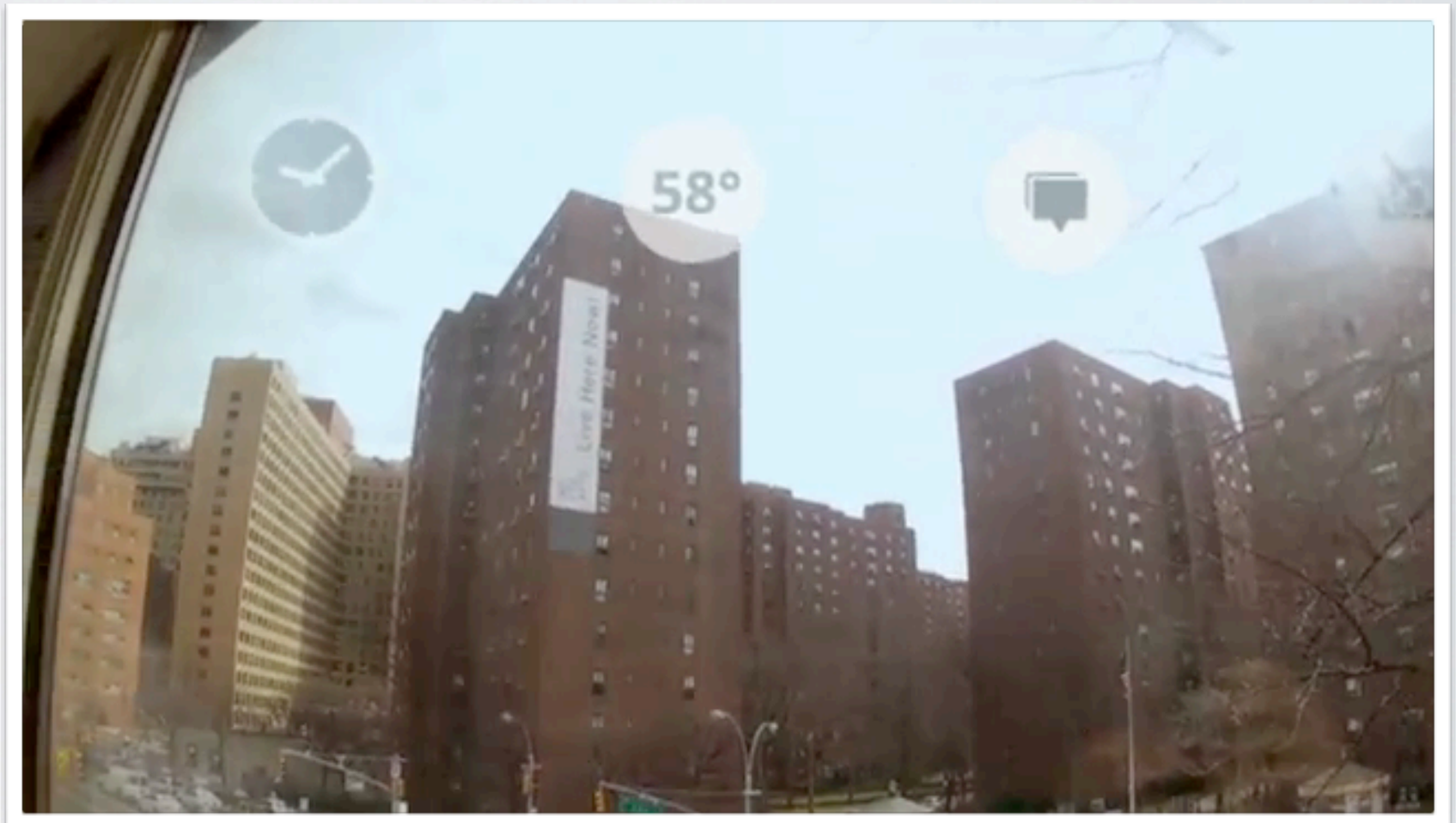
- July 2012
- Type: Public
- Tech: Fiducial marker & Kinect
- Theme: promote, imagine

http://www.youtube.com/watch?v=UjW-CGJG8kE

CASE STUDIES
Google glass project

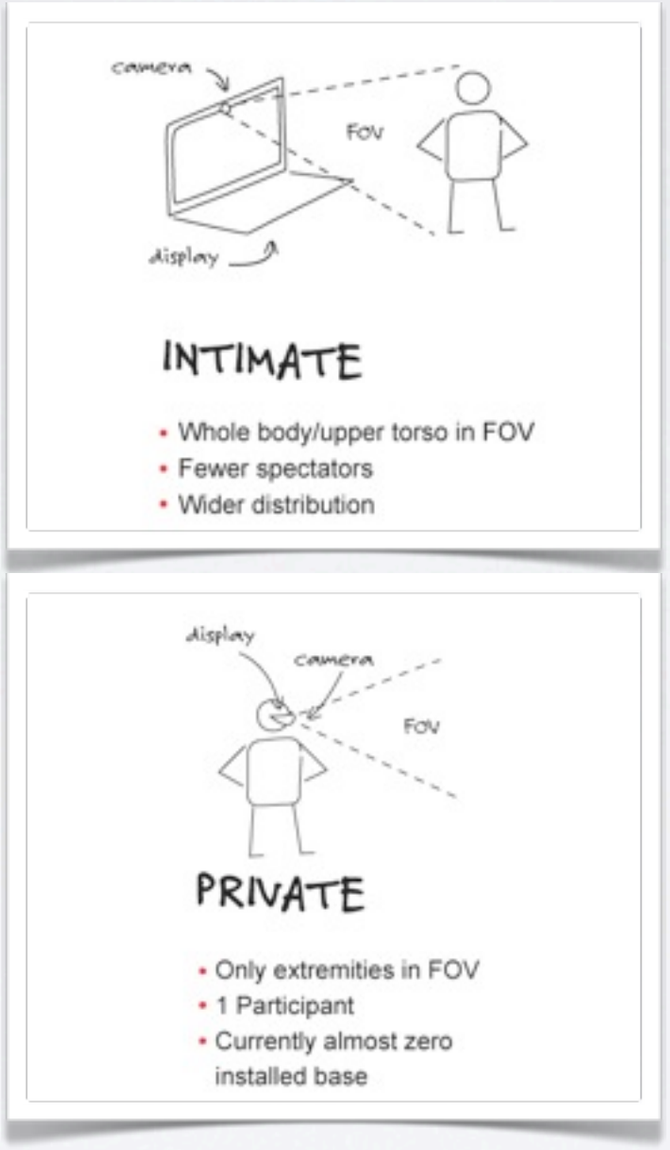


- April 2012
- Type: Private
- Theme: promote, imagine



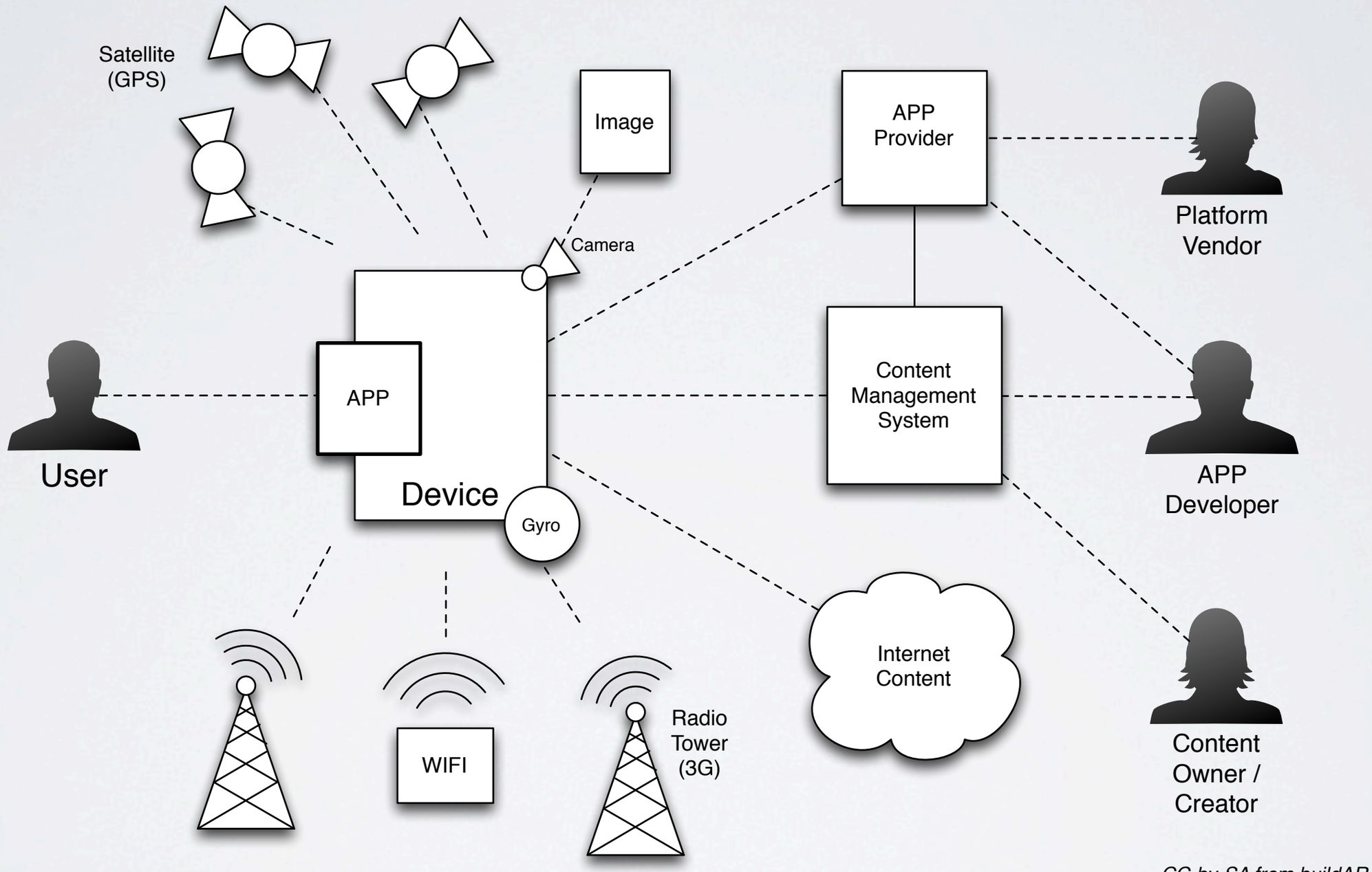
http://www.youtube.com/watch?v=9c6W4CCU9M4

TECHNOLOGY
AR themes and UI's



cc-by-sa ar-ux.com (Manson, R. 2012)

TECHNOLOGY
AR development model



CC-by-SA from buildAR

AR Camps and Workshops

STUDIO

A ‘seeding’ model of innovation

Camps and Workshops

- Design oriented processes
  discover, interpret, ideate, prototype and evolve
  user profiling, customer journey maps and UX-design

- Open un-conference
  allow for *partner contribution and cooperation*

- Action based
  stop talking start doing, takes practise...

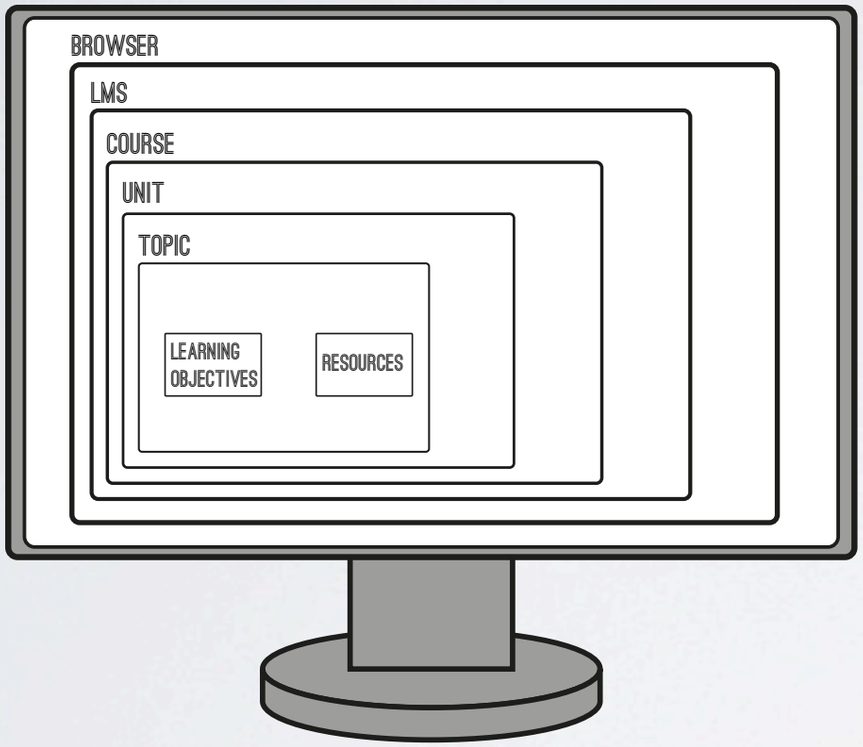
- Flipped
  Pre and post workshop support

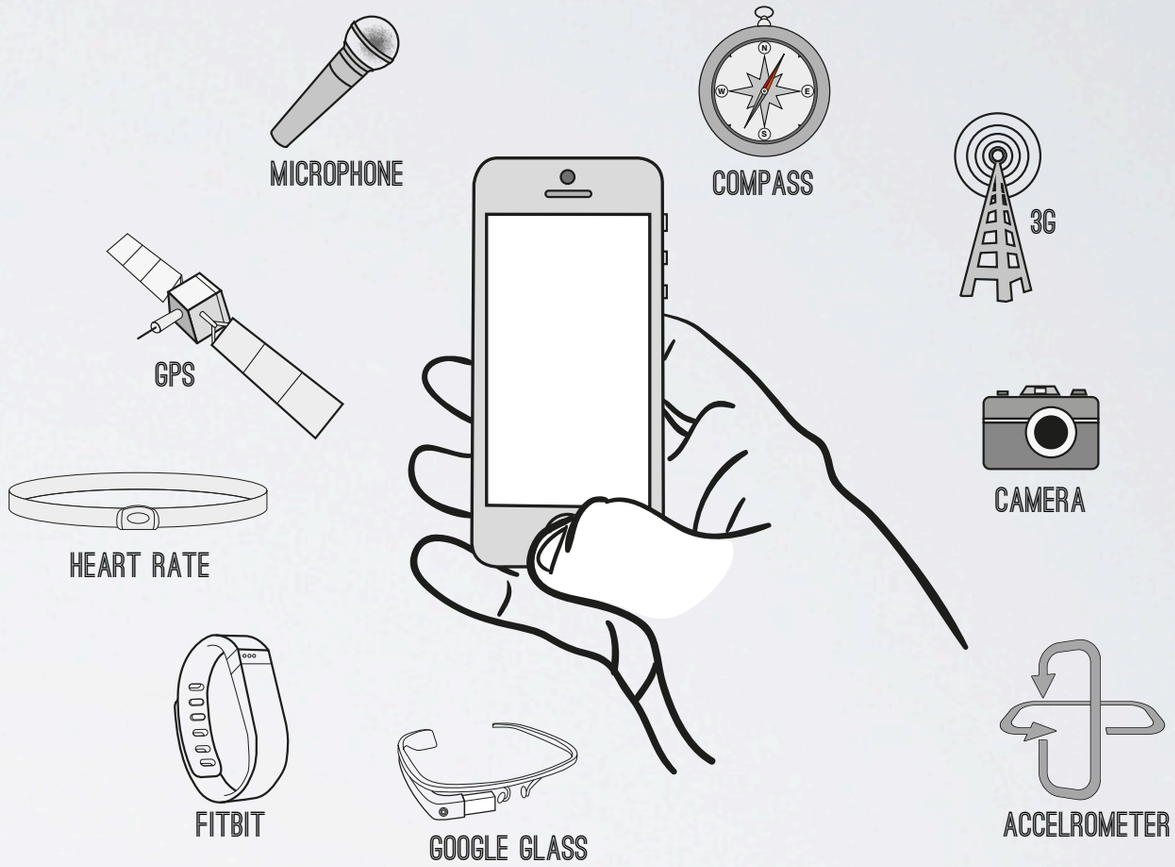
- Scalable format
  20 mins to 4 weeks

- Evaluation
  Post event survey, significant impact on understanding

“a conceptual framework for thinking about the ways of using technology in higher education contexts”

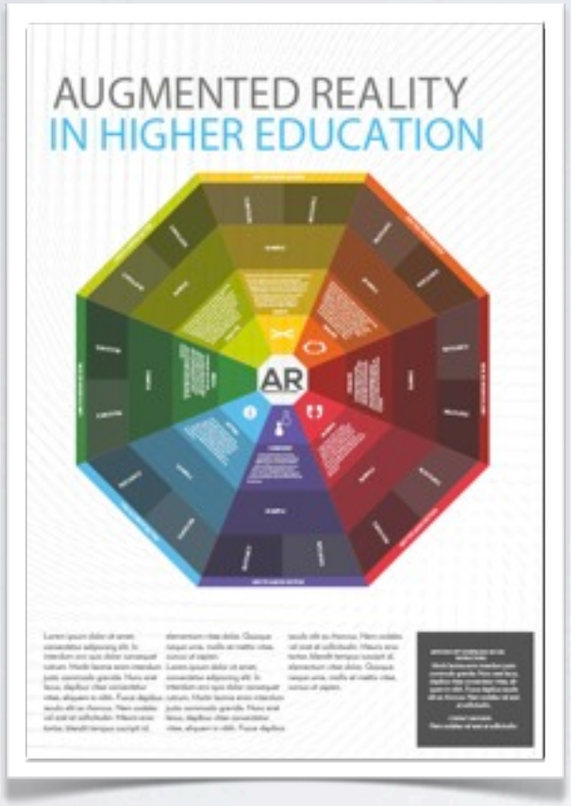
STUDIO
future opportunities





'AR offers opportunities to expand our concept of learning spaces, to create new dimensions in mobile learning and to increase connectedness of learners in multiple contexts'

THANKS



- **AR in Higher Education (eBook)**
  Available in Dec 2013

- **Position paper**
  http://bit.ly/arpaper

- **ARstudio apps**
  IOS http://bit.ly/arstudioapp
  Android http://bit.ly/arstudioapp2

- **New ARstudioEdu app**
  Available in Nov 2013

- **Register at Website**
  http://www.arstudio.edu.au