COMMUNICATION TECHNOLOGY UPDATE 2023

Augie Grant, Ph.D.

J. Rion McKissick Professor of Journalism
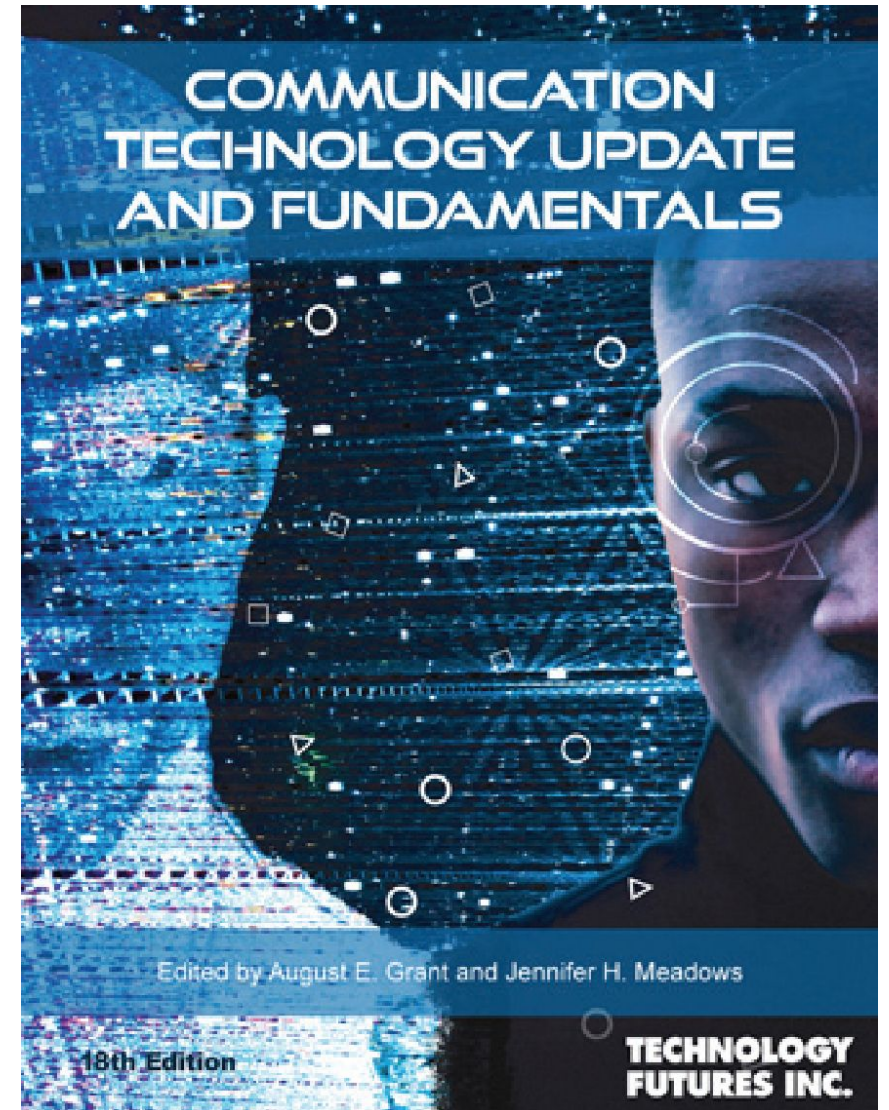
UNIVERSITY OF
South Carolina

College of Information
and Communications

TELEVISION

OTT/STREAMING TODAY
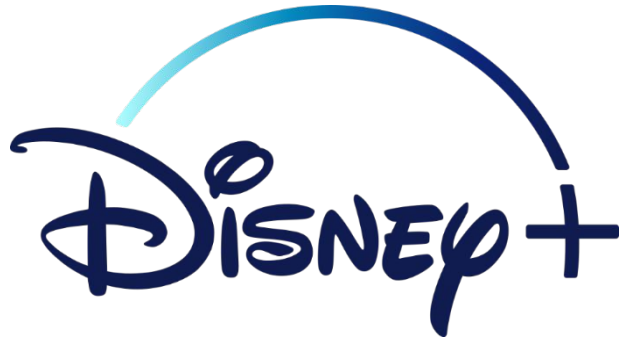
College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

BUNDLING

The next step—combining multiple streaming services into a single subscription

- Didn't we used to call this "cable?"

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

IMPACT ON TRADITIONAL TV

- Local
  - Shift to more local news content
  - Cord cutting leads to loss of retransmission revenue (up to 20% of gross)
  - Importance to local advertisers
- Network
  - Direct delivery to viewers
    - NBC ☐ Peacock
    - CBS ☐ Paramount +
  - Increased dependence upon live sports

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

ATSC 3.0 BROADCAST STANDARD

- Delivery of 4K
- Up to 120 fps
- HDR
- Enhanced audio
- Mobile television
- Need for bandwidth
- Broadcast transition
- Targeted Advertising

nextgenTV™

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

ATSC 3.0 PROGRESS

- Adopted by more than 300 TV stations across more than 60 markets
- So far, nearly invisible to users

- Note: revenue opportunities with digital services and targeted advertising

ANTENNA USE IS ON THE RISE (AGAIN...)

- 18% of U.S. households watched TV using an over-the-air antenna in 2022

- Among young viewers: 22% (up from 14% in 2021)

- Question:
  - Will Broadcast TV resurge or be reinvented?

Image credit: Horowitz

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

MORE VIDEO DEVICES THAN EVER

- Numbers:
  - 121 million U.S. TV Households in 2023
  - S&P Global predictions
    - 2023: 225 million smart TVs
    - 2026: 1.1 billion connected video devices (up from 1 billion in 2022)

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

HIGH-RESOLUTION TV

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

NEXT WAVES IN TV

- Higher quality display
  - OLED, Mini-LED, QLED
- 8K
  - Primary a display technology
  - Will be used extensively in digital signage and TV production
- Frame rate (30, 60, 120, 240)
- HDR
- Key issue: Content (Streaming first)

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

ADDRESSABLE ADVERTISING

- Native in streaming and digital audio

- ATSC 3.0 Broadcast: Use of bandwidth to deliver and store multiple ads
  - Algorithms select the most relevant ads
  - Enables highly targeted advertising

- Significant revenue potential
  - Development of industry standard
    - Adoption needed by manufacturers, networks, & advertisers

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

CINEMA

EVOLUTION OF CINEMA CONTINUES

TRADITIONAL
- Theaters
- DVDs and Videocassettes
- Hotel and airline pay per view
- Television networks

EMERGING
- Theaters
- Streaming
- Pay per view
- Cable networks

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

MOST IMPORTANT FUNCTION OF THEATERS

- Intense shared experiences for young adults engaged in courting rituals

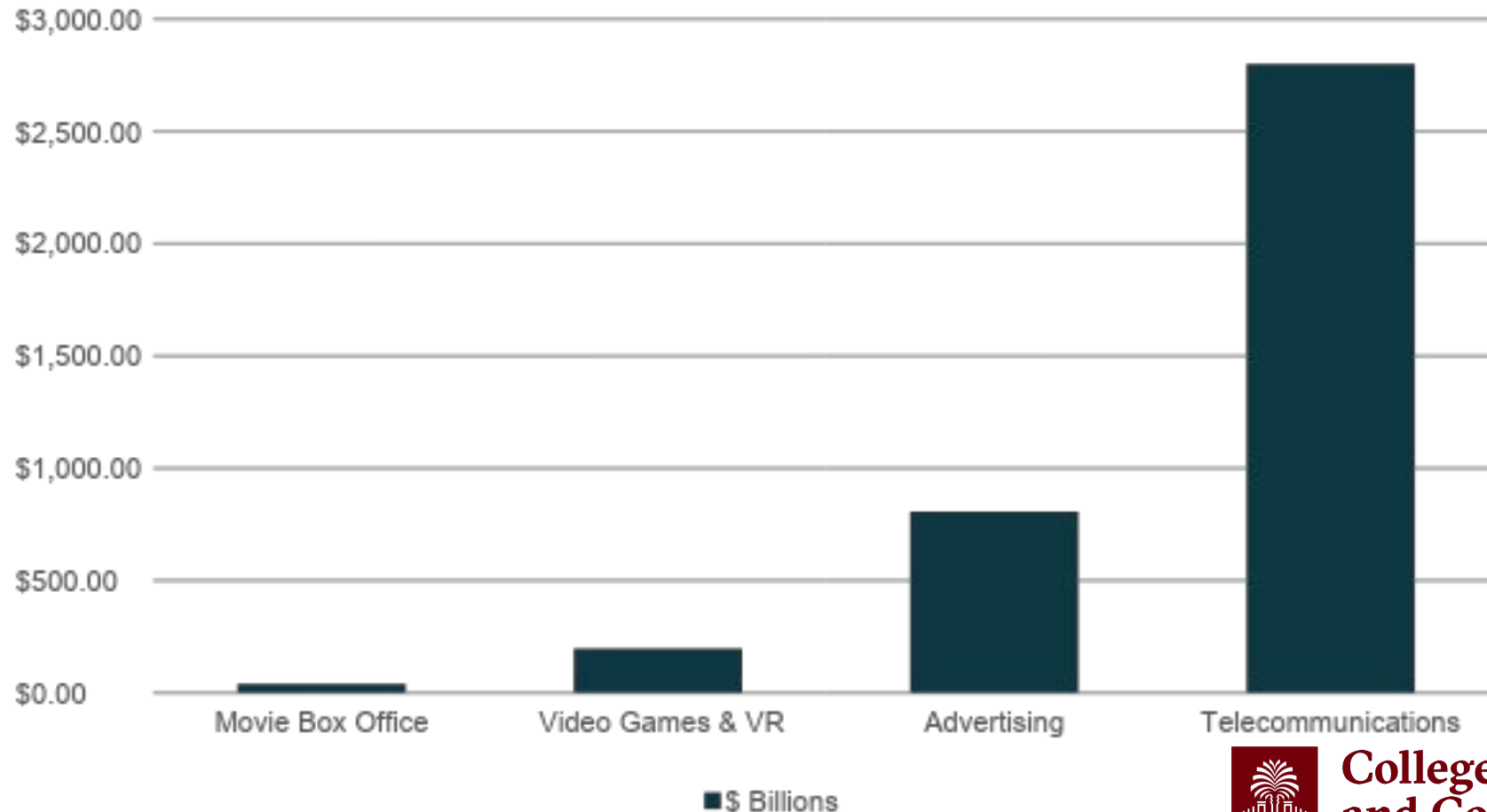College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

A FEW ECONOMIC DETAILS

- Half of "box office" revenue stays in the theater
- Box office and concessions still not enough to stave off financial challenges of movie theaters
- Profit participants may not benefit from streaming on co-owned channels
  - New economic models are needed

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

RADIO IS STUBBORNLY ANALOG...

- In the U.S., FM and AM radio continue to generate cash
  - Digital broadcast option (HD Radio) has not taken off
- Digital in the U.S. is satellite and streaming
  - Increasing proportion of "satellite" service is streamed

- Global: Variety of digital broadcast standards, but no global standard

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

VIDEO GAMES

2022 Global Revenues: $197 billion

CONVERGENCE OF VIDEO GAMES AND VR

- Multiplayer universes
- Fluid identities
- Immersive experience

Source: Cnet

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

MOST POPULAR GAME: FORTNITE

- 2021 revenues $5.8 billion (est.)
- 2022 regular users: 390 million

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

THE "METAVERSE"

- Not here yet
- Virtual words are unconnected

- Key question: Will they become connected as email and internet were in the 1990s?

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

CHALLENGES OF THE METAVERSE

- Physical
  - 15 minute limit
  - Reluctance to use HMDs

- Critical Mass
  - Need to connect virtual worlds to maximize interactivity

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

METAVERSE PREDICTIONS

- Commercial applications will overwhelm all others
  - Consider the evolution of the internet
- HMDs will be less popular that multi-screen setups
  - Curved
  - Stacked
  - Surround
- NOT the Killer App for 10 Gbs broadband

VR

VIRTUAL REALITY CREEPS ALONG…

College of Information and Communications
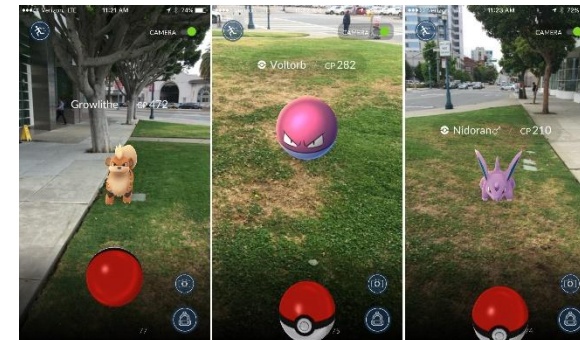UNIVERSITY OF SOUTH CAROLINA

KEY DEVELOPMENTS

- Untethered HMDs
- Slow growth
- Industrial, business, and educational applications more important than games
- Physical limitations
  - Accessibility
  - 15-minute limit
  - Need for dedicated space

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

AUGMENTED REALITY

RIBA Stirling Shortlist
The British Museum World Conservation & Exhibitions Centre

ESPORTS

VIDEO GAMES AS SPECTATOR SPORTS

- Twitch
  - Adds interactivity among viewers
- Arenas
  - All of the excitement of sports events and concerts

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

LEAGUES AND COLLEGIATE COMPETITION

Example: California Community College eSports League

DIGITAL SIGNAGE

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

FOUR TYPES

- Point of Wait
- Point of Transit
- Point of Sale
- Point of Mind

KEY FACTORS FOR DIGITAL SIGNS

- Efficiency
- Environmental (including power consumption)
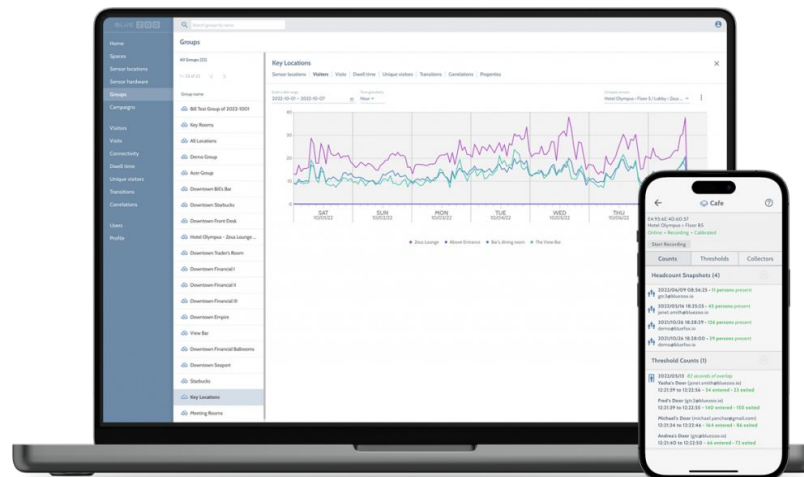- Regulation (distraction and neighborhood aesthetics)
- Function

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

POINT OF MIND—DIGITAL SIGNAGE AS ART FORM

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

MEASURING OOH IMPRESSIONS

- Camera

- Phone detection
  - BlueZoo

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

COMPUTERS

COMPUTER-RELATED DEVELOPMENTS

- Continued shift to cloud computing
  - Increases importance of reliable and secure network connections
- Laptop/tablet use
- Multiple monitors

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

INTERNET ACCESS OPTIONS

- Mature:
  - Telco
  - Cable

- Emerging:
  - 5G

- Satellite

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

HOME INTERNET ACCESS

- According to LRG, 90% of U.S. homes have internet access

- Penetration should soon exceed peak for landline telephone

- Has internet become a utility?

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

POST-PANDEMIC PATTERNS

- Increased remote work

- Limited pressure to return to office

- Ability to be geographically dispersed

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

ISSUES IN WORK FROM HOME

- Control and trust
- Ownership and payment for technology
- Payment for networking and space
- Separation of work time and personal time
- Definition of workspace

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

LEARN FROM HOME

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

ISSUES IN REMOTE LEARNING

- Access to technology and network
- Need for socialization
- Sick days and snow days
- Academic integrity

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

AREAS OF EHEALTH

- Diagnosis
  - Telehealth
  - Symptom analysis
    - From WebMD to AI

- Monitoring

- Treatment

- Payment
  - Cost savings and efficacy

- eHealth could be a Killer App for 10 Gbps broadband

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

SOCIAL MEDIA

MANY BIG ISSUES IN SOCIAL MEDIA

- Critical mass
  - The best replacement for Twitter is _____
- Negative impacts
  - Political processes
  - Fomenting anger and other emotions
- Advertising challenges
- Anti-trust
  - Especially Meta

META REFOCUS

- Metaverse pivot
- Digital advertising challenges
- Studies of negative impact
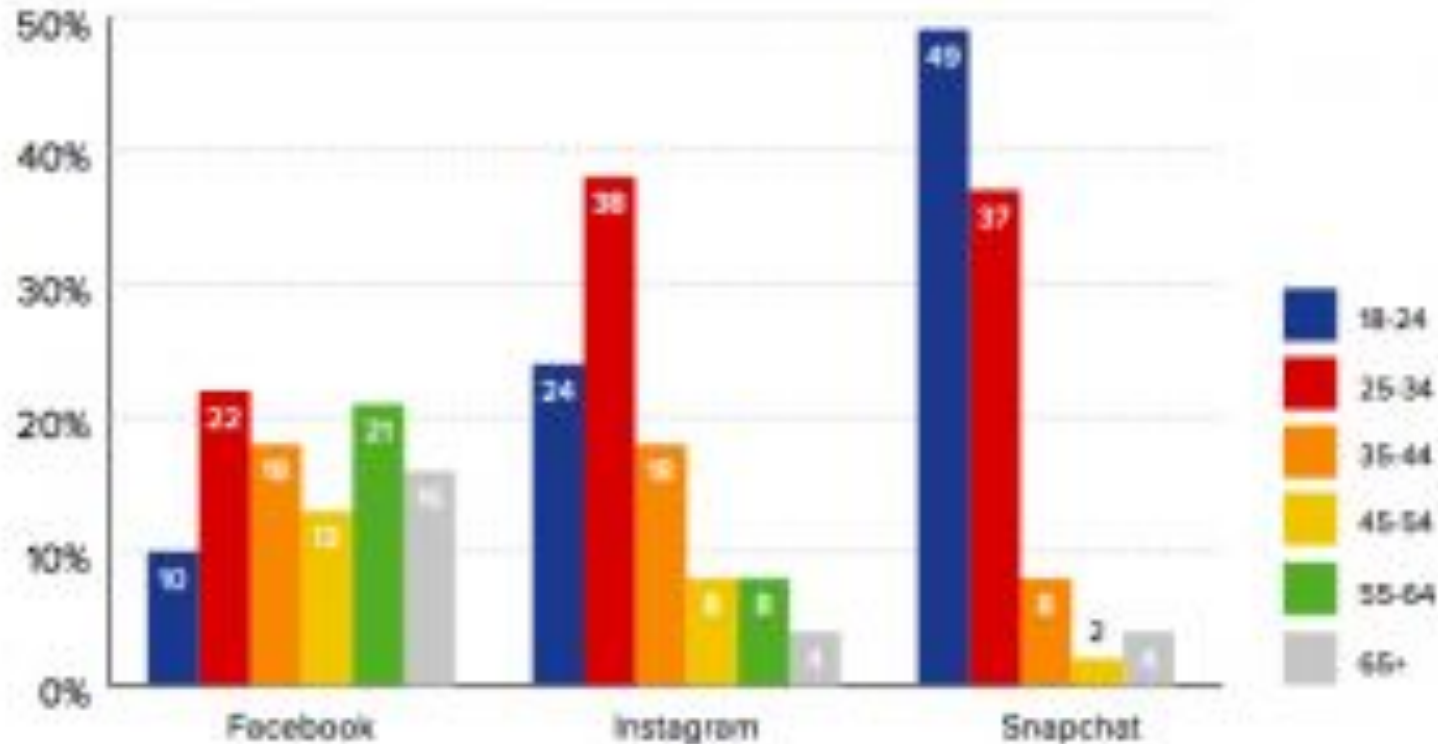- Antitrust concerns

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

REGULATION

- Antitrust
- Children
  - Negative impacts
  - Need for parental permission and supervision
- Section 230

SEGMENTATION

Source: Brandwatch

TELEPHONY

5G SUMMARY

- 5G is not a single technology, but rather a group of innovations that allow faster networks

- Short-term
  - More of a marketing tool than a useful tech

- Long-term
  - Creation of new capabilities that leverage high speed of compact networks

5G IMPACT

- Fixed wireless for in-home networking

Source: Samsung

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

5G FACTORS

- 5G is a group of technologies
  - Multiple bandwidths
  - Different range
- Capabilities of 5G are still being developed

…but…

- 5G is a marketing tool
- 5G misinformation is rampant

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

SMALL TELEPHONY DETAILS

- Evolution from attaching phones to places to attaching phones to people

- Decreased use of voice services by younger users

- Telephone as tracking device
  - Retail
  - Digital signage

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

AI

BRAVE NEW WORLD OF ARTIFICIAL INTELLIGENCE

- ChatGPT
    - GIGO
- Adaptive systems
- Decision assistance
- Limitations

- Buzz Word of the Year (so far)

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

SURVEILLANCE

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

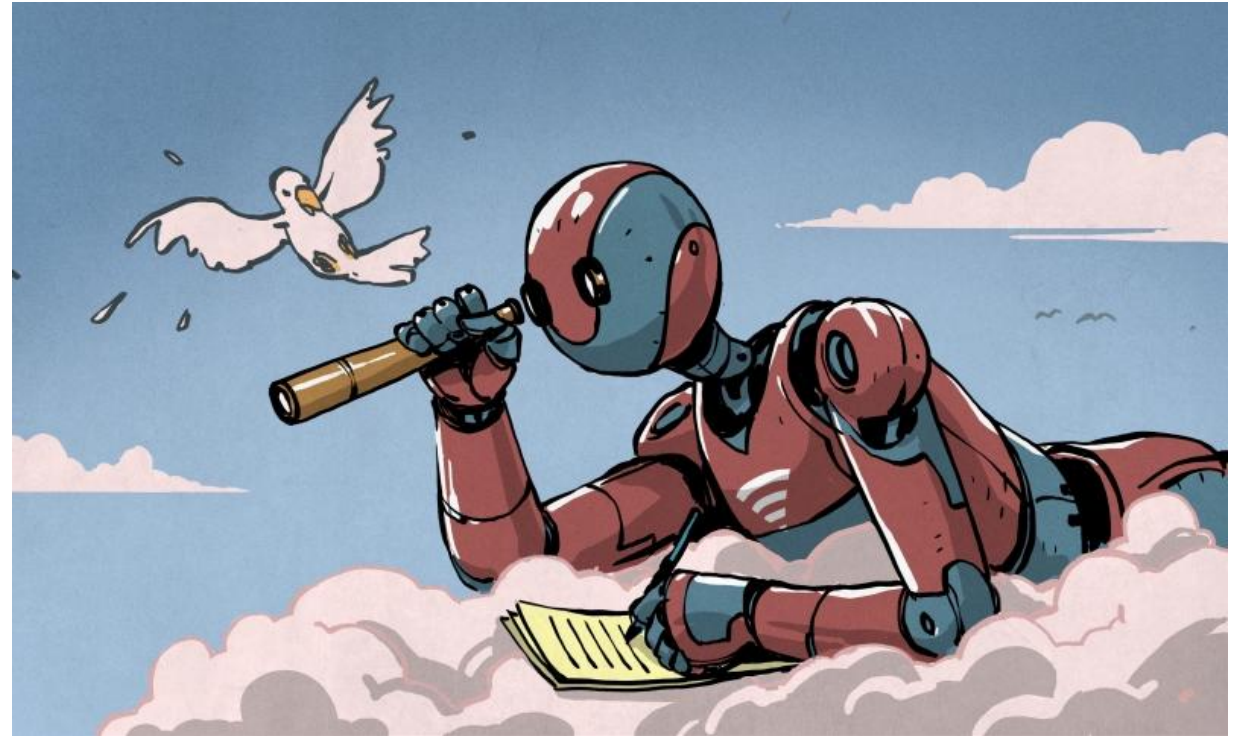# ROCKWELL'S LAMENT

- The panoptic society
  - Everyone is always seen everywhere

- Access to surveillance
  - Law enforcement
  - Marketing
  - Stalking

INTERNET OF THINGS

College of Information
and Communications
UNIVERSITY OF SOUTH CAROLINA

NEW CONNECTIVITY STANDARD

Google

COMCAST

matter

amazon

HUAWEI

Infineon

...e of Information
...Communications
UNIVERSITY OF SOUTH CAROLINA

INTERNET OF THINGS EXPLOSION

- Matter standard leading to interoperability
- Number of devices
- Increased availability of networking
  - Bluetooth
  - WiFi
  - Cellular
  - NFC
  - Zigbee

- BUT not the refrigerator!

POWER

POWER SOLUTIONS

- Wired
- Battery

- Cutting edge:
  - Wireless power
  - Energy harvesting
    - Light
    - Heat
    - Motion
    - Other?

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA

DAILY TECH TIDBITS:

@CommTechUpdate

- Augie Grant
- J Rion McKissick Professor of Journalism
- augie@sc.edu
- @augiegrant

College of Information and Communications
UNIVERSITY OF SOUTH CAROLINA