Cyber and Information Warfare:
The Next Battleground

Man's discoveries, and penchants for violence

| Enlightenment | Discovery | Contemplation | Misuse |

"Dawn of Man" Scene from 2001 A Space Odyssey

"Hard times create strong men. Strong men create good times. Good times create weak men. And, weak men create hard times."

― **G. Michael Hopf, Those Who Remain**

Thoughts on Banning's Presentation - Aug 2019

Global Challenges and Opportunities

Banning Garrett
World Affairs Council of South Texas
Corpus Christi
22 August 2018

- **Banning's take:**
- Mankind can't afford to struggle with cooperation and compassion
- Science-based policy making must prevail
- Urbanization will increase, widening demographic gaps
- Increased population and climate change will present hardest tests

- **Alex's Addendum**
- We are evolving away from violent death and kinetic conflict
- We still exert force on each other, increasingly metaphysically
- New ways of force projection are heavy in Cyber, Information Warfare
  - The world is exponentially increasingly network-connected
  - Information flows in ways none anticipated, and in dizzying volumes
  - We are currently to new forms of warfare, and we're working on how to mitigate threats

Sophisticated Weapons, Declining Violence

Stone Age	Bronze	Middle	Civil War	WWI	WWII	Vietnam	Desert Storm	Global War on Terror

| Blunt objects | Spears, Armor | Formations, Archery | Repeating Rifles | Machine Guns, Chemical Weapons | Tanks and Airplanes | Assault Rifles and Helicopters | Advanced Fighters, Communications, Space | Intelligent Systems, High degrees of integration |

Cyberspace Warfare - what does it mean to you?

"Multidomain" fighting in the Information Space - electronic, cyber

C2 Cell (CONUS)

What's being done, tactically

The "Cymera™" model- Time to market in Cyber Warfare
Multi-disciplinary fusion for shortest critical path
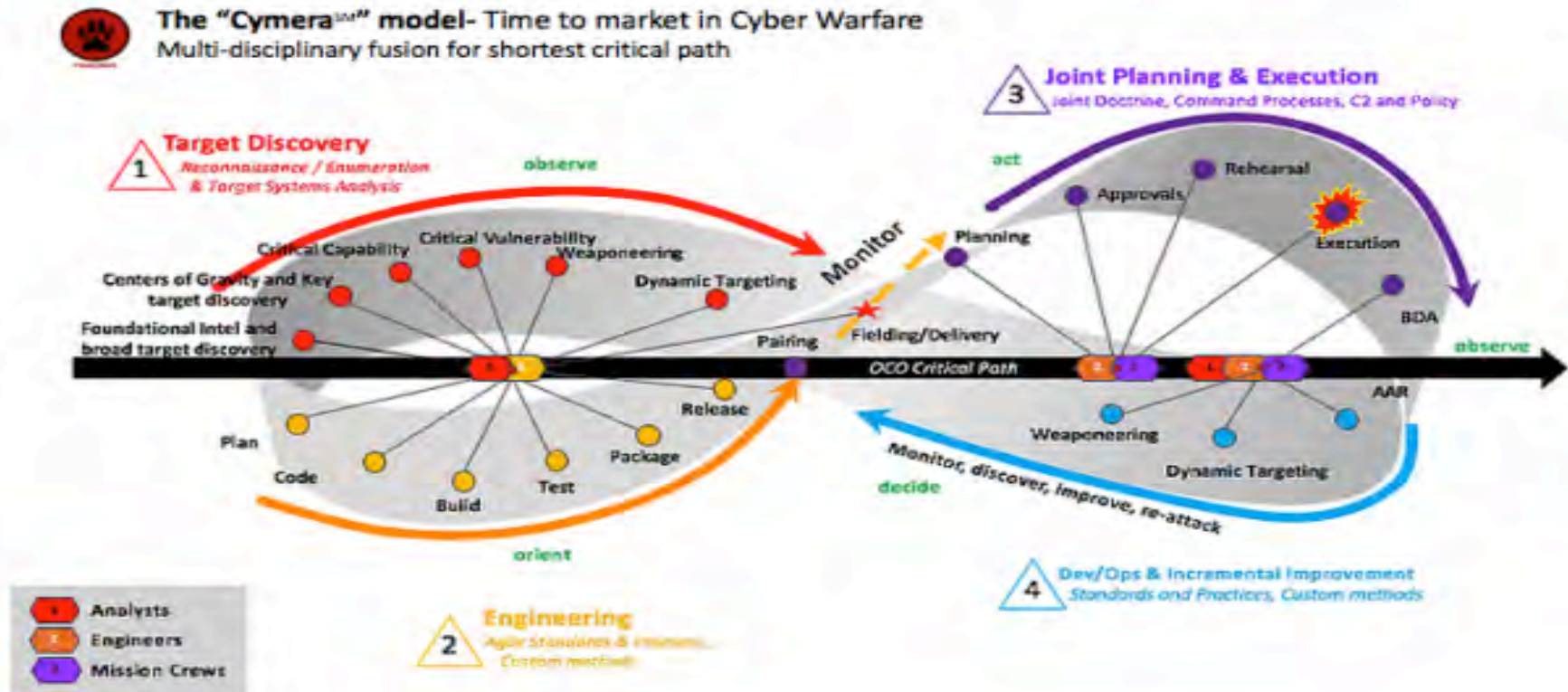
Cyber Warfare in particular is a race to *decision superiority*, which can only be attained through fierce multimodal achievement in Intel, engineering, operations, and development/operations

What's being done - strategically

A *Hierarchy of Needs* for Decision Advantage, Deterrence in Cyber Warfare
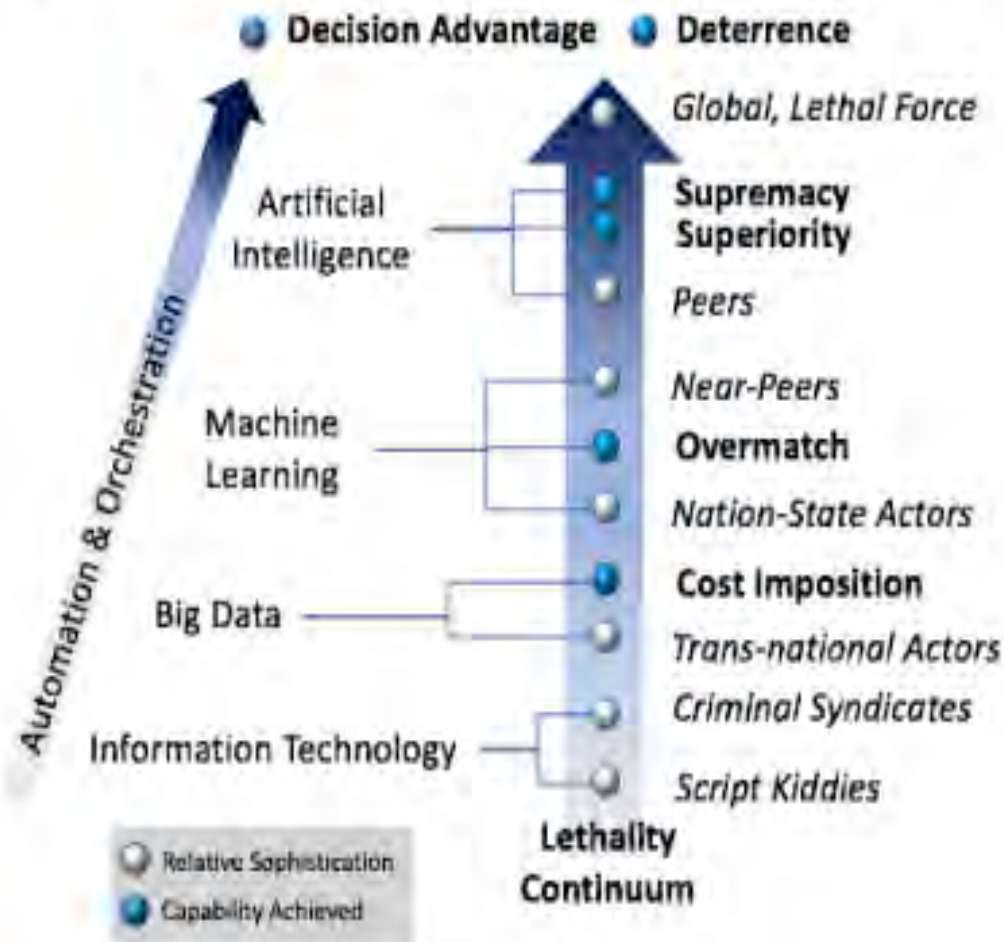
On Cyber War - thoughts for Corpus Christi specific to industry

- **Implementations already underway to secure new investments**
- **Must retain key personnel on staff to help guide cybersecurity efforts (Chief Info Security Officer)!**
- **Know your touchpoints in:**
  - FBI
  - DHS
  - National Guard
- **Participate in exercises**
- **Consider some light reading**
  - [Wired NotPetya Article](#)
  - **and some books**
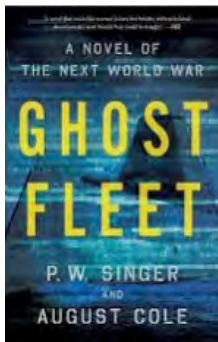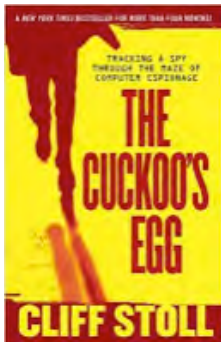
EP SCADA, Human Machine Interfaces, highly networked industrial spaces

The Internet of Things - a hyperconnected world is upon us

Estimated Internet-Connected Device Installed Base — Global
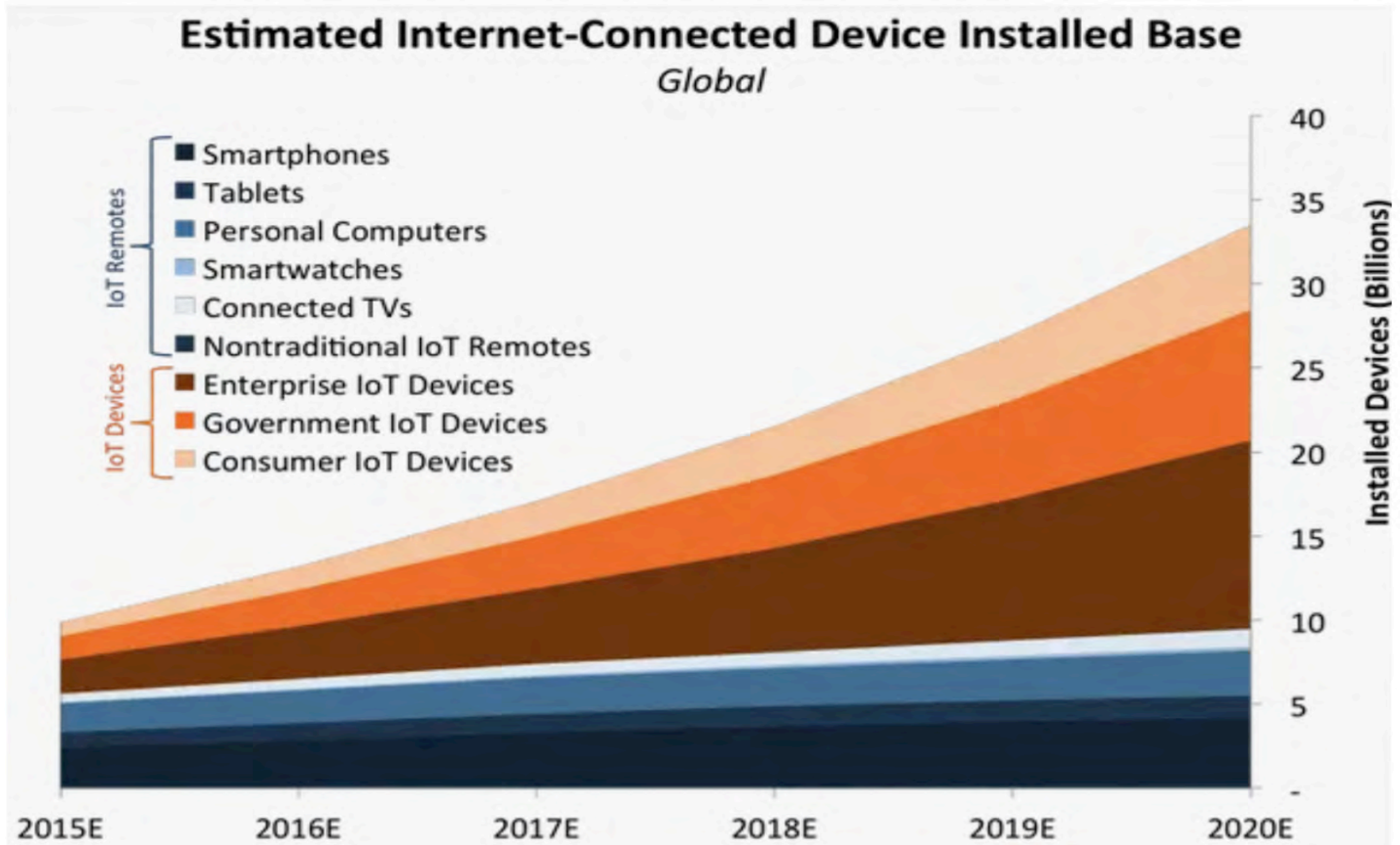
On Cyber War - personal level, understanding your "attack surface"

- **What can/should I do to safeguard myself?**
  - Call ISP, ask if router is most current, incl. OS
  - **Ask yourself: *what all is connected to my network?***
    - Computers
    - Phones
    - Tablets
    - Game systems
    - Printers
    - Appliances
      - Thermostats
      - Refrigerator
      - Washer/dryer
      - microwave

Information Warfare – Basic Anatomy of Attack

Some examples of activity in 2016 elections, which aggregate to a general campaign of interference

Staging	Recon	Targeting	Mimicry	Placement	Amplification	Promotion
• Pick SM platforms • Pick initial audiences • Create accounts	• Aggregate and fuse data on audiences	• Define audience segments • Select allies & agents	• Replicate audience own discussions • Plant persona within audience	• Insert themes into target audience	• Use SM platforms to broadcast • Enmesh organic and placed content	• Elevate content creators, allies, agents

The American people should understand they are being targeted and manipulated by a deliberate, complex campaign meant to turn our differences into divisions. Russian GRU, FSB, SVR work systematically to exploit political and social distance, and to shape opinions through manipulation of information

Information War - on the homefront - what can I do?

There is no "Civil Defense" equivalent to mitigate IW effects here at home!

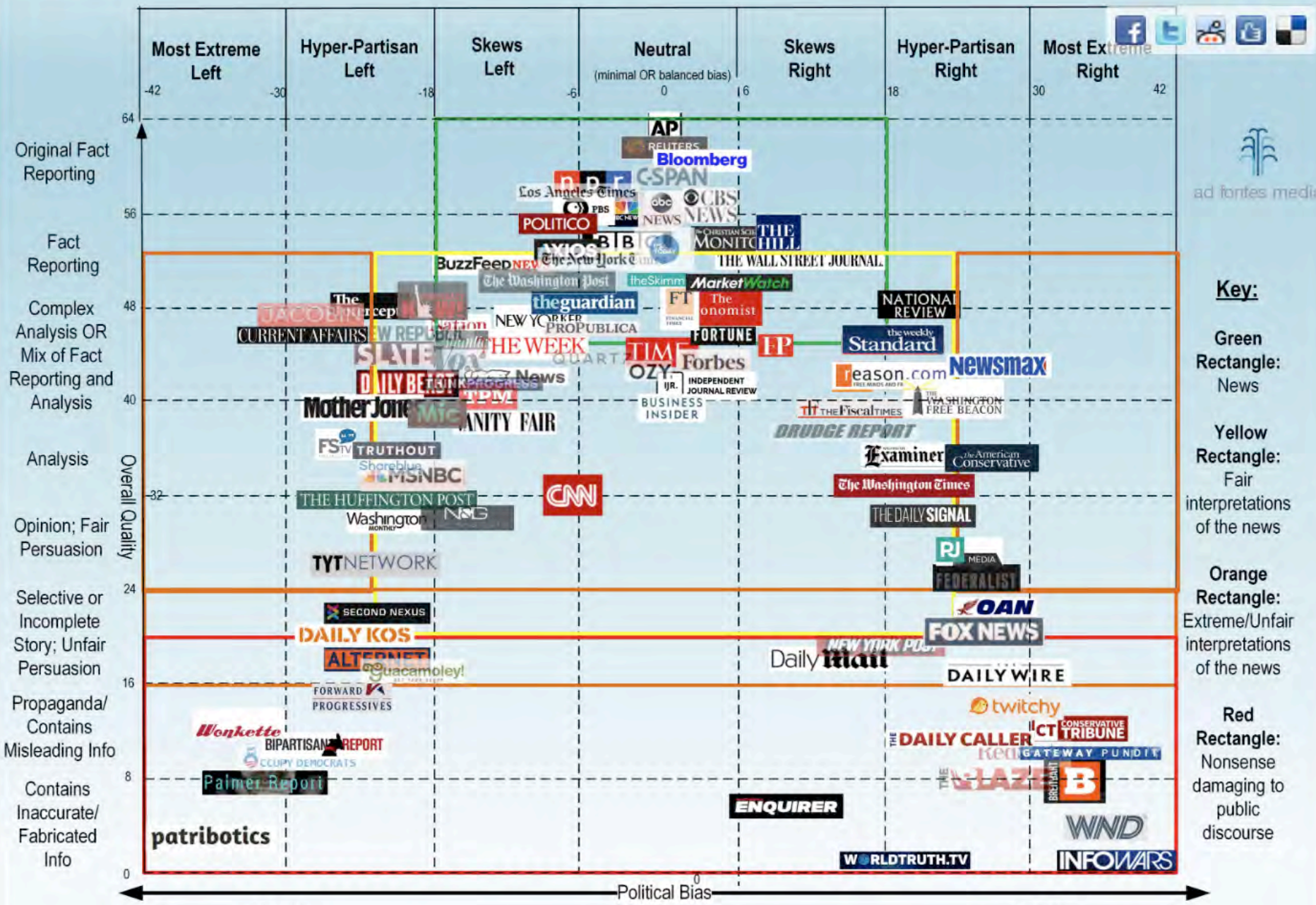**As a society, we must consider our vulnerability to adversaries looking to exploit American open society values**

Challenges currently manifested in:

- News choices

- SM followings

- Resistance reading for objectivity

- Fundamental polarization

  - Urban and rural needs

  - Conservative vs. liberal politics

  - Tribalism and denigration of opposite view

  - Incidence of hyper-availability of information

Media Bias Chart

Political Bias (horizontal axis): Left ← → Right

Columns:
- Most Extreme Left (-42, -30)
- Hyper-Partisan Left (-30, -18)
- Skews Left (-18, -6)
- Neutral (minimal OR balanced bias) (-6, 0, 6)
- Skews Right (6, 18)
- Hyper-Partisan Right (18, 30)
- Most Extreme Right (30, 42)

Overall Quality (vertical axis):
- Original Fact Reporting (64)
- Fact Reporting (56)
- Complex Analysis OR Mix of Fact Reporting and Analysis (48)
- Analysis (40)
- Opinion; Fair Persuasion (32, 24)
- Selective or Incomplete Story; Unfair Persuasion (24, 16)
- Propaganda/Contains Misleading Info (16, 8)
- Contains Inaccurate/Fabricated Info (8, 0)

Outlets plotted include: AP, REUTERS, Bloomberg, C-SPAN, NPR, Los Angeles Times, PBS, ABC NEWS, CBS NEWS, POLITICO, BBC, The Christian Science Monitor, THE HILL, AXIOS, The New York Times, THE WALL STREET JOURNAL, BuzzFeed News, The Washington Post, theSkimm, MarketWatch, JACOBIN, The Intercept, Mother Jones, The Nation, theguardian, FT (Financial Times), The Economist, NATIONAL REVIEW, CURRENT AFFAIRS, NEW REPUBLIC, New Yorker, ProPublica, FORTUNE, the weekly Standard, SLATE, Vox, THE WEEK, TIME, Forbes, FP, Newsmax, DAILY BEAST, ThinkProgress, News, OZY, IJR, INDEPENDENT JOURNAL REVIEW, reason.com, MotherJones, Mic, VANITY FAIR, BUSINESS INSIDER, THE Fiscal Times, THE WASHINGTON FREE BEACON, FSTV, TRUTHOUT, Shareblue, DRUDGE REPORT, MSNBC, Examiner, the American Conservative, THE HUFFINGTON POST, Washington Monthly, N&G, CNN, The Washington Times, THE DAILY SIGNAL, TYT NETWORK, PJ MEDIA, SECOND NEXUS, FEDERALIST, OAN, DAILY KOS, FOX NEWS, ALTERNET, Guacamoley, NEW YORK POST, Daily Mail, DAILY WIRE, FORWARD PROGRESSIVES, twitchy, Wonkette, BIPARTISAN REPORT, THE DAILY CALLER, CT CONSERVATIVE TRIBUNE, OCCUPY DEMOCRATS, RedState, GATEWAY PUNDIT, Palmer Report, THE BLAZE, BREITBART, ENQUIRER, WND, patribotics, WORLDTRUTH.TV, INFOWARS

Key:

Green Rectangle: News

Yellow Rectangle: Fair interpretations of the news

Orange Rectangle: Extreme/Unfair interpretations of the news

Red Rectangle: Nonsense damaging to public discourse

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What Happens in an **Internet Minute?**

639,800 GB of global IP data transferred

20
New victims of identity theft

47,000
App downloads

61,141
Hours of music

20 million
Photo views

3,000
Photo uploads

204 million
Emails sent

$83,000
In sales

320+
New Twitter accounts

100,000
New tweets

135
Botnet infections

1,300
New mobile users

100+
New Linkedin accounts

6
New Wikipedia articles published

277,000
Logins

6 million
Facebook views

2+ million
Search queries

And **Future Growth** is **Staggering**

30
Hours of video uploaded

1.3 million
Video views

Today, the number of **networked devices** = the global population

By **2015**, the number of **networked devices** = **2x** the global population

In **2015**, it would take you **5 years** — IP — to view all video crossing IP networks each **second**

(intel)

A Minute on the Internet in 2019

Estimated data created on the internet in one minute

3.8m requests

347,222 scrolls

1m views

87,500 people on Twitter

4.8m GIFs served

$996,956 spent online

390,030 apps downloaded

60 Sec

1m logging in

4.5m videos watched

2.1m snaps taken

1.4m swipes

46,200 new posts

694,444 hours watched

188m emails sent

41.6m messages sent

statista

Conclusion

- **It's not all bad...in fact, things are getting better despite how it may seem!**
- **Still, we must find new ways to benefit from the discoveries we make, and find new capacity to cooperate!**

  - Conflict among humans is age-old, but physical violence declines
  - this brings us to metaphysical force, especially in Cyber
  - nations and trans-national actors will increasingly use Cyber for power
  - Information Warfare is already underway
  - natural divisions in an open society make good targets
  - combination of highly complex, networked systems and divisive social settings will give great opening to our adversaries

- **What we ought to do to overcome:**

  - *CW: Balance government interference/involvement in networked technology*
  - *IW: Insist on normalizing information by trusted sources*

- **Why some of these matters are simply difficult:**

  - Cyber defenses are costly, difficult to manage in free market
  - 1st Amendment rights are prone to paradoxes
  - beneath politics, actual social inequality persists
  - Our adversaries have nothing but time, and the US is the world's primary target