



# **FAKE NEWS, DISINFORMATION, PROPAGANDA**



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## Education

Department of Information Management, College of Police Science and Technology, Central Police University(CPU), Taiwan



## Work experience

- 2-month(2019) research in College of Communication and Information, Florida State University, Tallahassee, FL, USA
- A white-hat at NCCST (National Center of Cyber Security technology) in 2017,2018.
- Sub-Lieutenant, police of information management, Wanhua Precinct, Taipei City Police Department



## ABOUT ME

## Achievements

- **Paper presentation:** 'A Framework for SQL Injection Investigations: Detection, Investigation, and Forensics,' The 2018 IEEE International Conference on Systems, Man, and Cybernetics (**SMC 2018**), Miyazaki, Japan, pp. 2834-2839, Oct. 7-10, 2018. (EI) (ISBN:978-1-5386-6649-4)
- **Paper Acceptance:** '“On the left side, there’s nothing right. On the right side, there’s nothing left:” Polarization of Political Opinion by News Media,' iConference 2020.

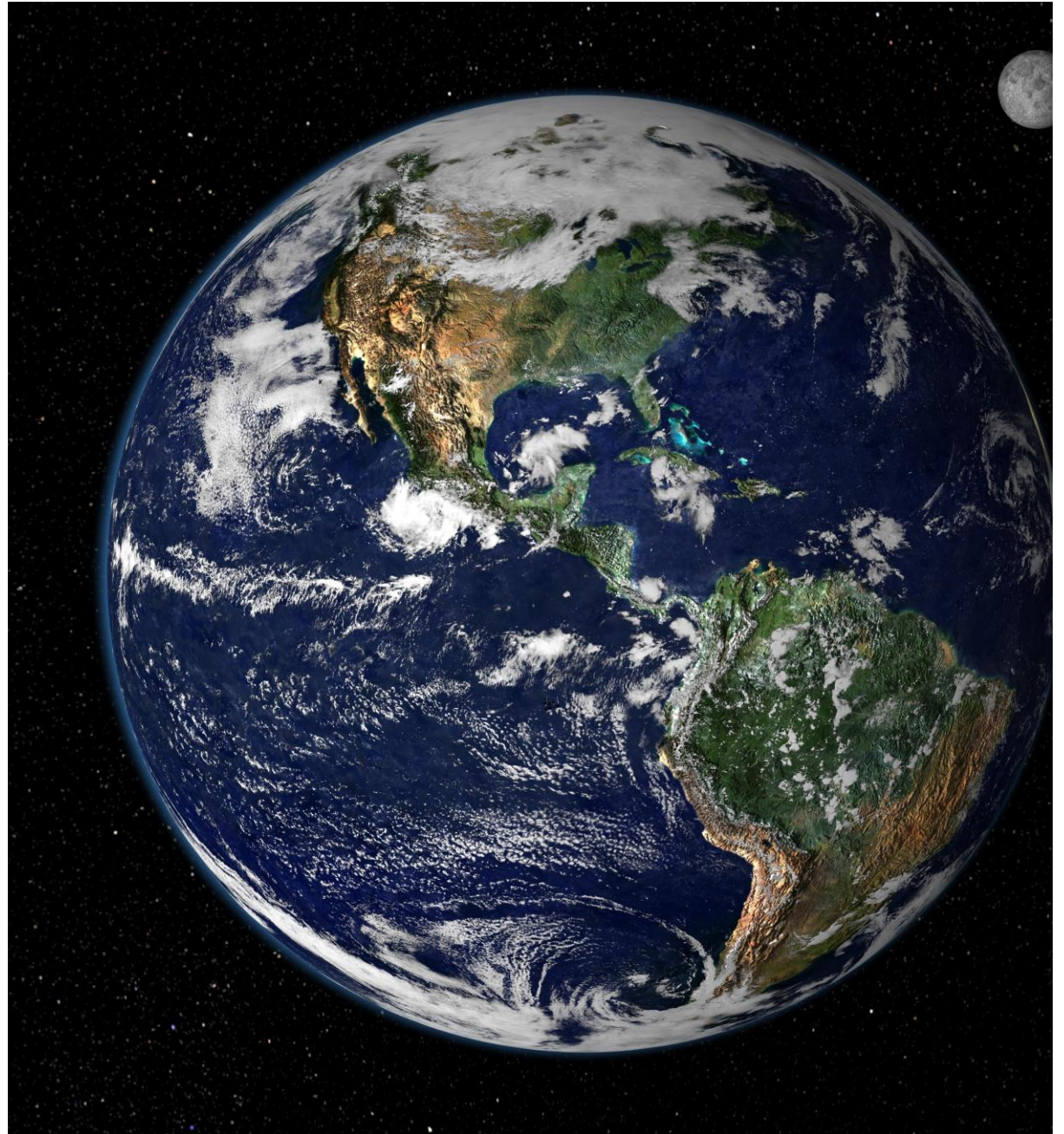




# Donut?




Source: YouTube



Source: Kevin Spencer from flickr





The power  
of Internet



Source: [www.depositphotos.com](http://www.depositphotos.com)



Source: [www.weblyzard.com](http://www.weblyzard.com)



Source: Presidential Elections in 2017



Source: THE ECONOMIC TIME

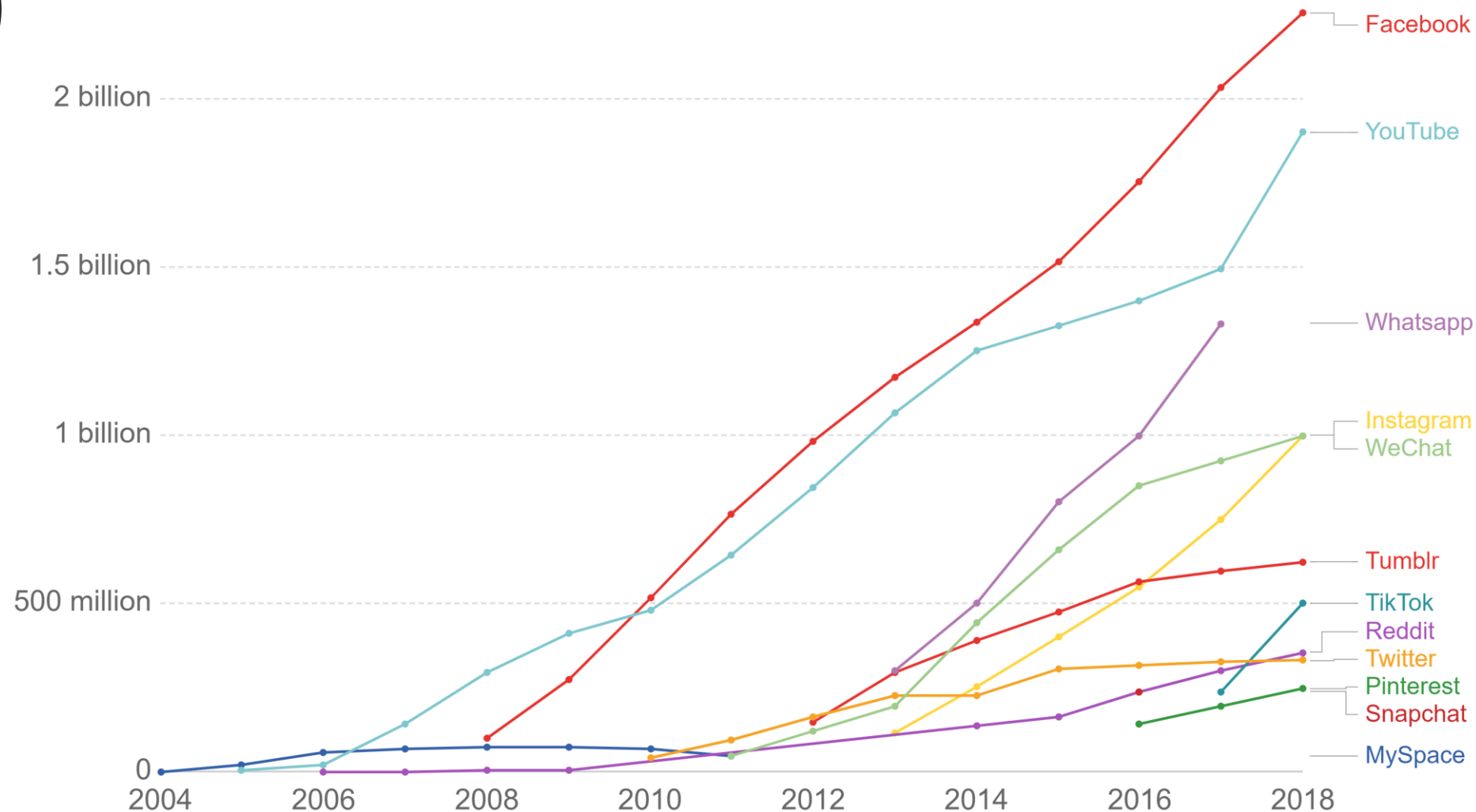


# Timestamps

## Number of people using social media platforms

Estimates correspond to monthly active users (MAUs). Facebook, for example, measures MAUs as users that have logged in during the past 30 days. See source for more details.

Our World  
in Data



Source: Statista and TNW (2019)  
CC BY

Fake news

Disinformation

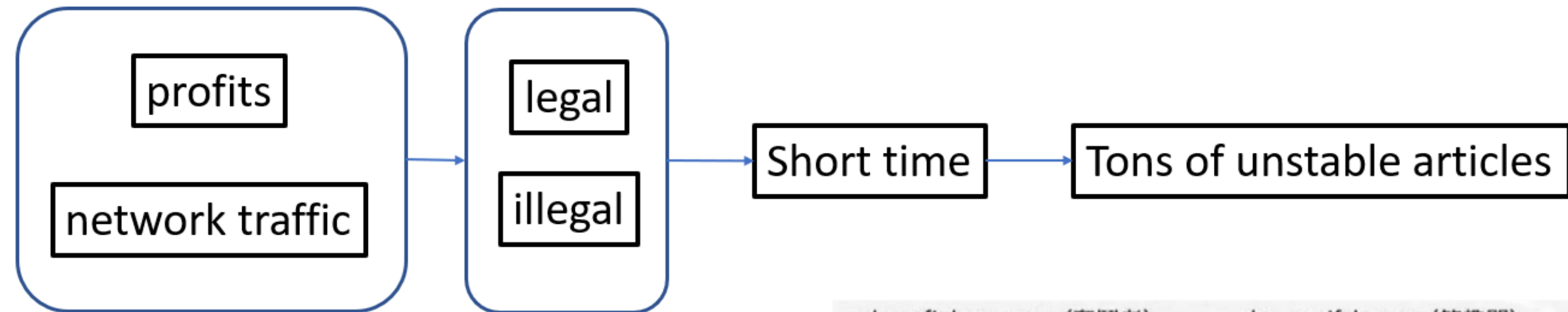
Taiwan

Propaganda





# Content farm 2016 in Asia country



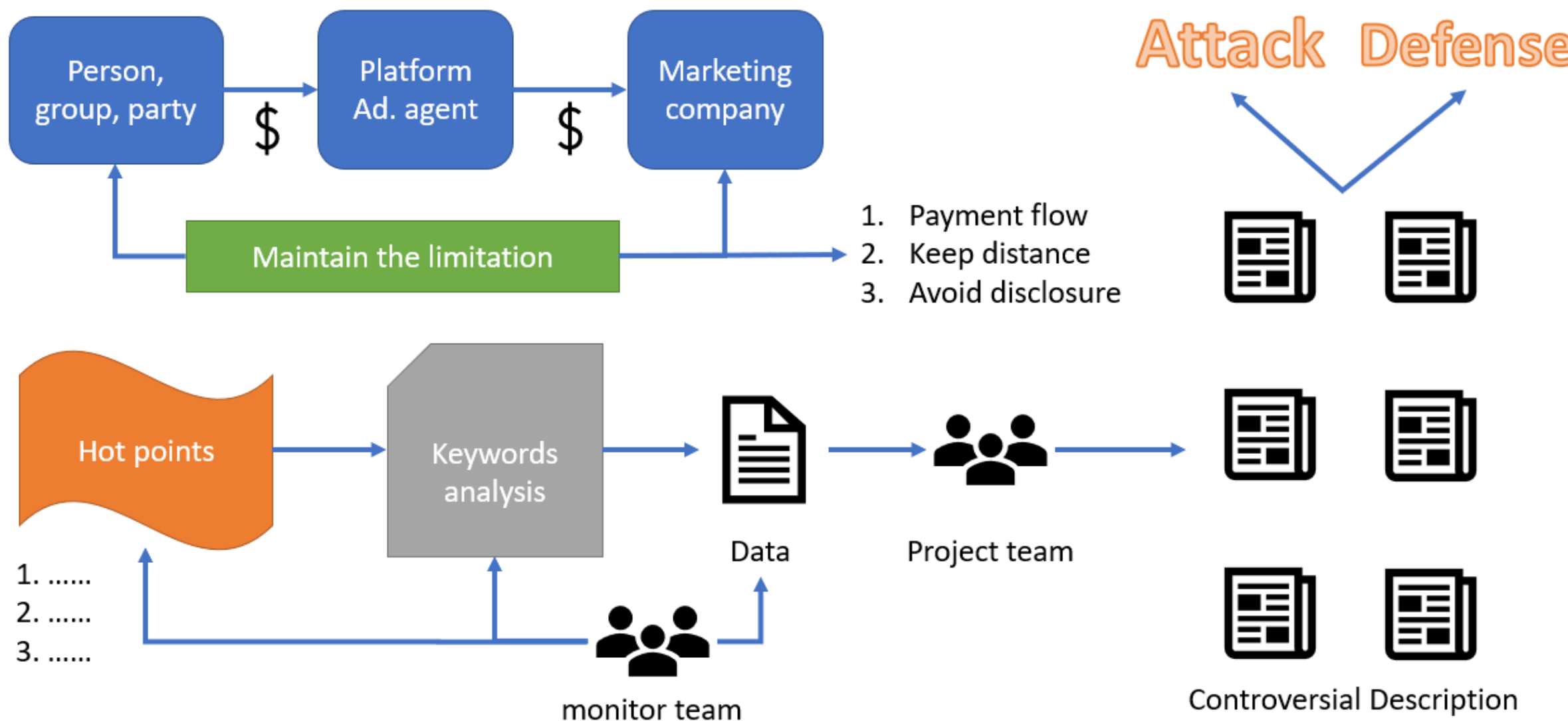
Plagiarism

Advertisement Marketing

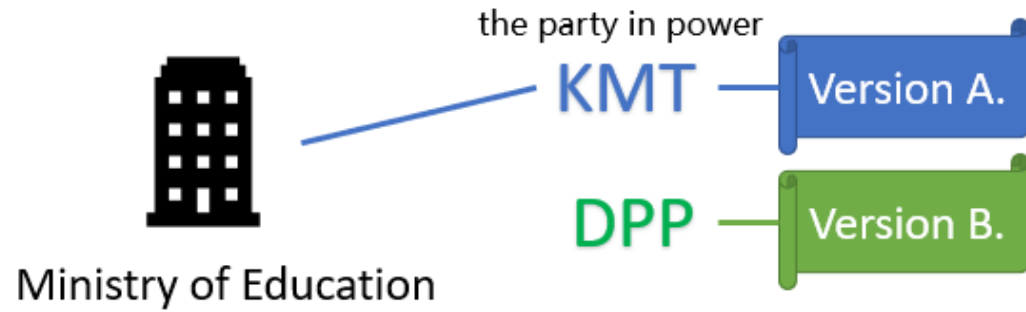
- aboutfighter.com (奮鬥者)
- bldaily.com (美麗日報)
- Bomb01.com
- BuzzHand
- cocohk系列
- **cocomy.net** (COCO大馬)
- damaday.com (大馬加油)
- ezp93.com
- **funnyanecdote.com** (新政聞)
- foyuanvip.com (佛道)
- gigacircle.com
- happytifyhome (笑趣聞)
- **happtify.cc** (歡享網)
- hotstartabloid.com (STAR星聞)
- imama.tw (i媽媽)
- kknews.cc (每日頭條)
- ptt01.cc (PTT01 娛樂新聞)
- read01.com (壹讀)
- teepr.com (趣味新聞)
- twgreatdaily.com
- www.contw.co



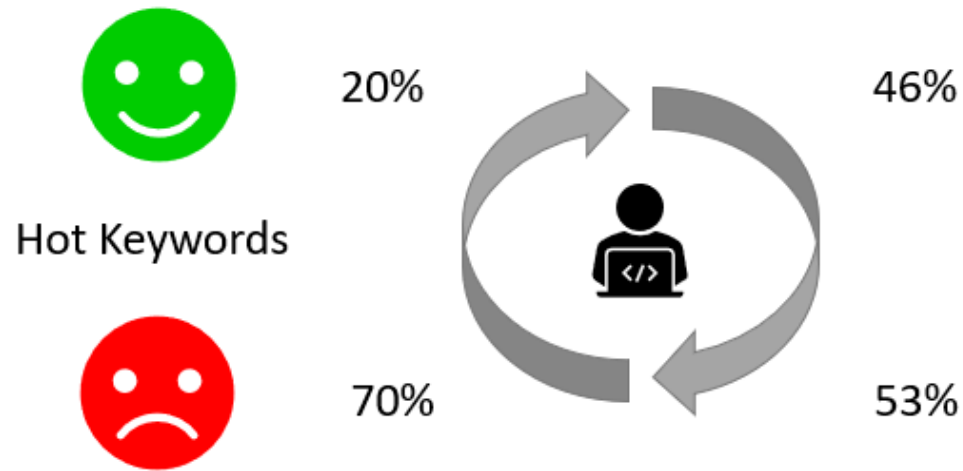
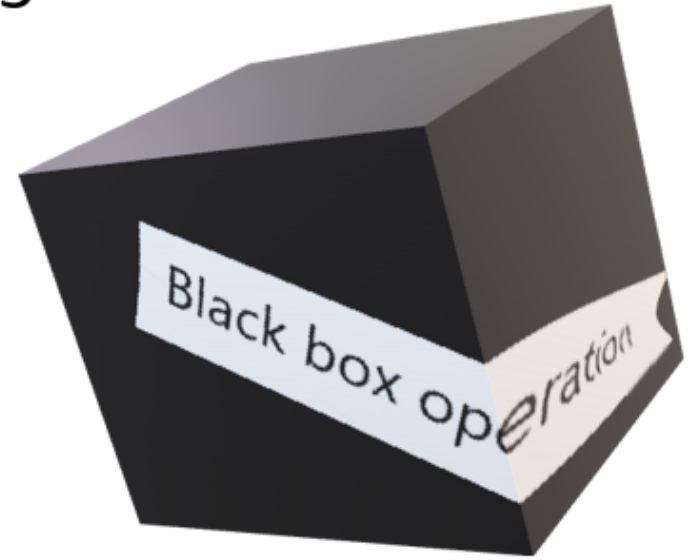
# THE STRATEGY IN TAIWAN



## Example: the adjustment of syllabus in Taiwan at 2015



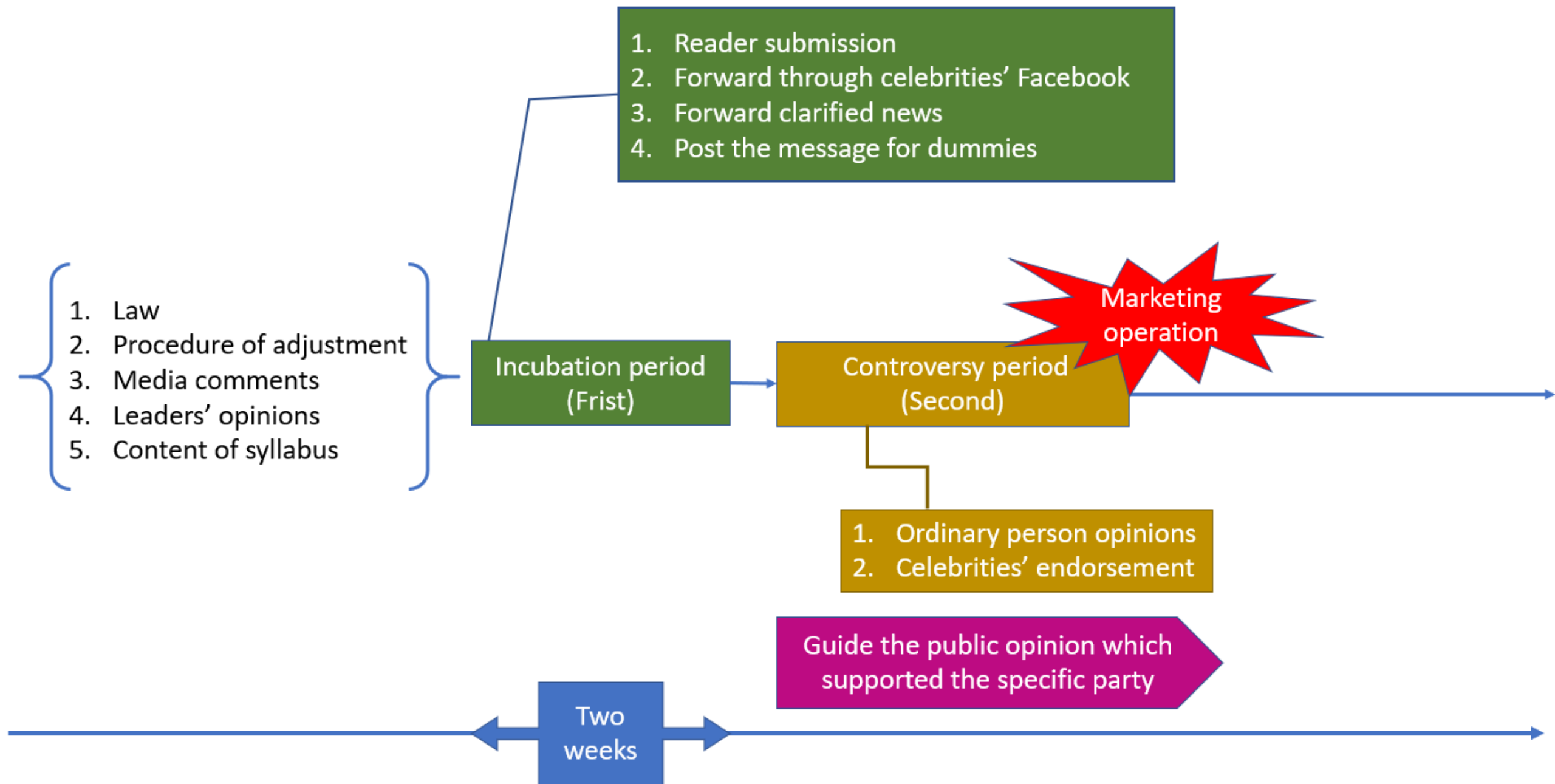
Been impugned



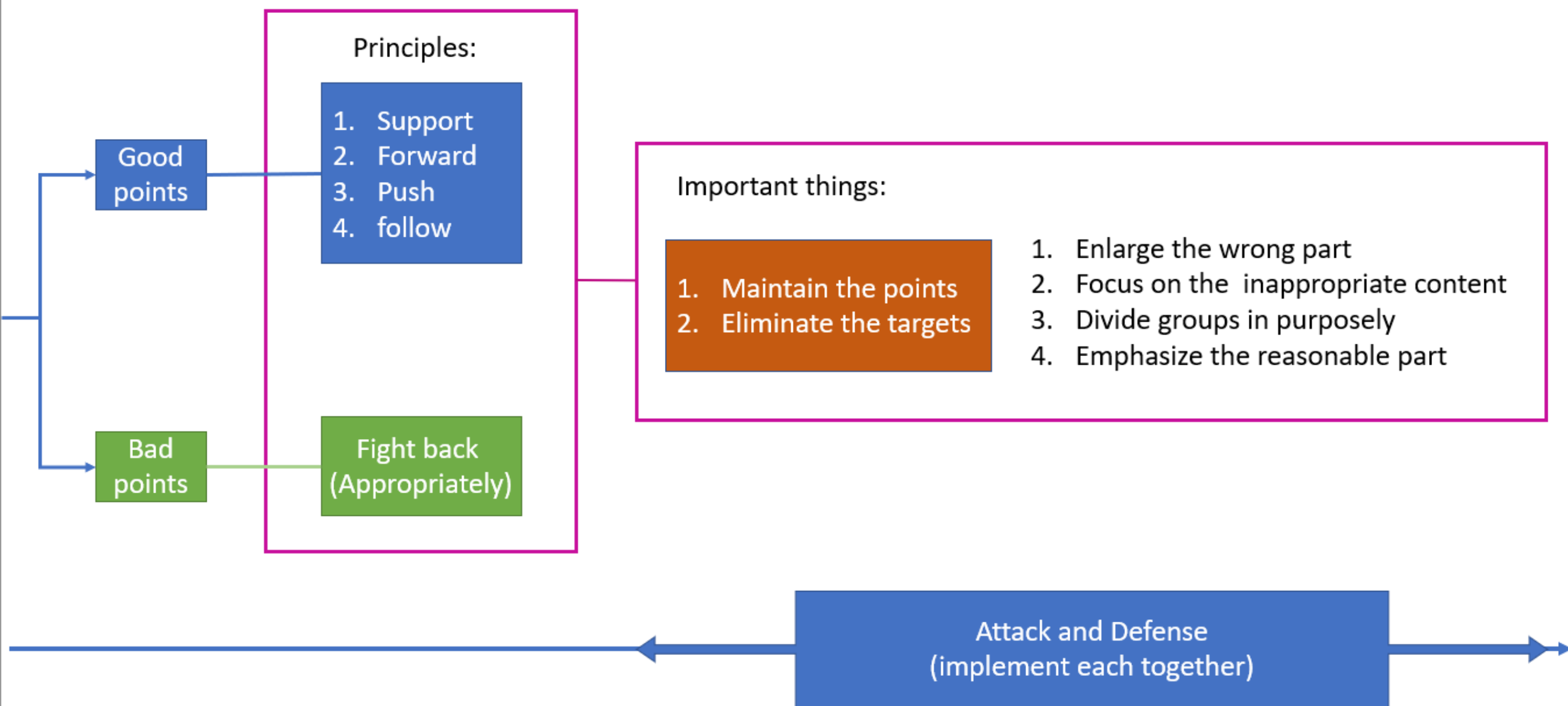
Be operated

Be balanced

Dilute the attention on the criticized party





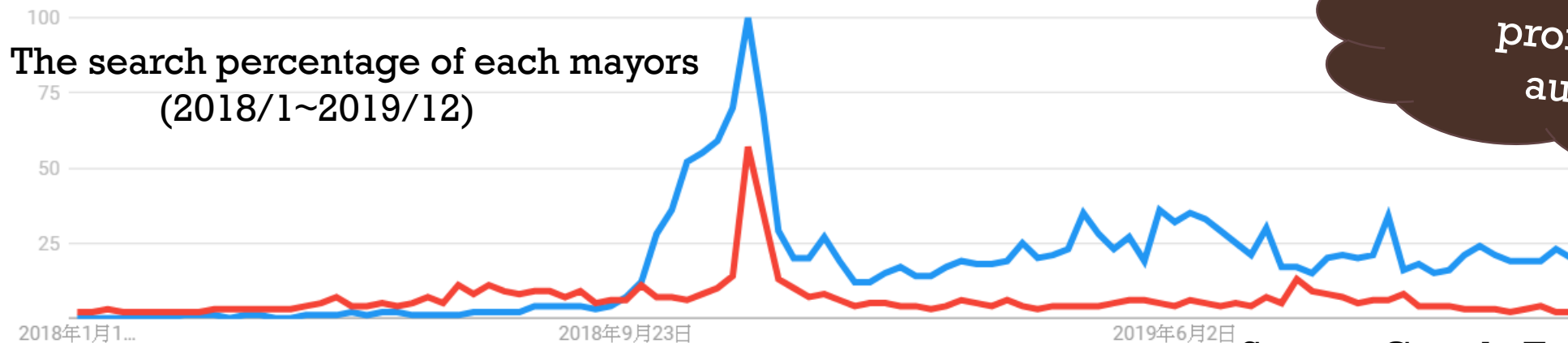


# WHAT WE CAN SEE?

- Dawn of the ordinary person
  - One plays multiple roles. (e.g. students, victims, retired teacher, famous teacher)
  - No ossified thinking. → close to people' thoughts (sense of participation)
  - Make good use of public opinions and make them good for specific group.
  - Don't emphasize the profession.

Pretend

Soften the  
opposite  
thought



Differentiate to the  
professional  
authority

Han Kuo-yu   
Ko Wen-je 

Source: Google Trends

# WHAT WE CAN SEE? (CONT.)

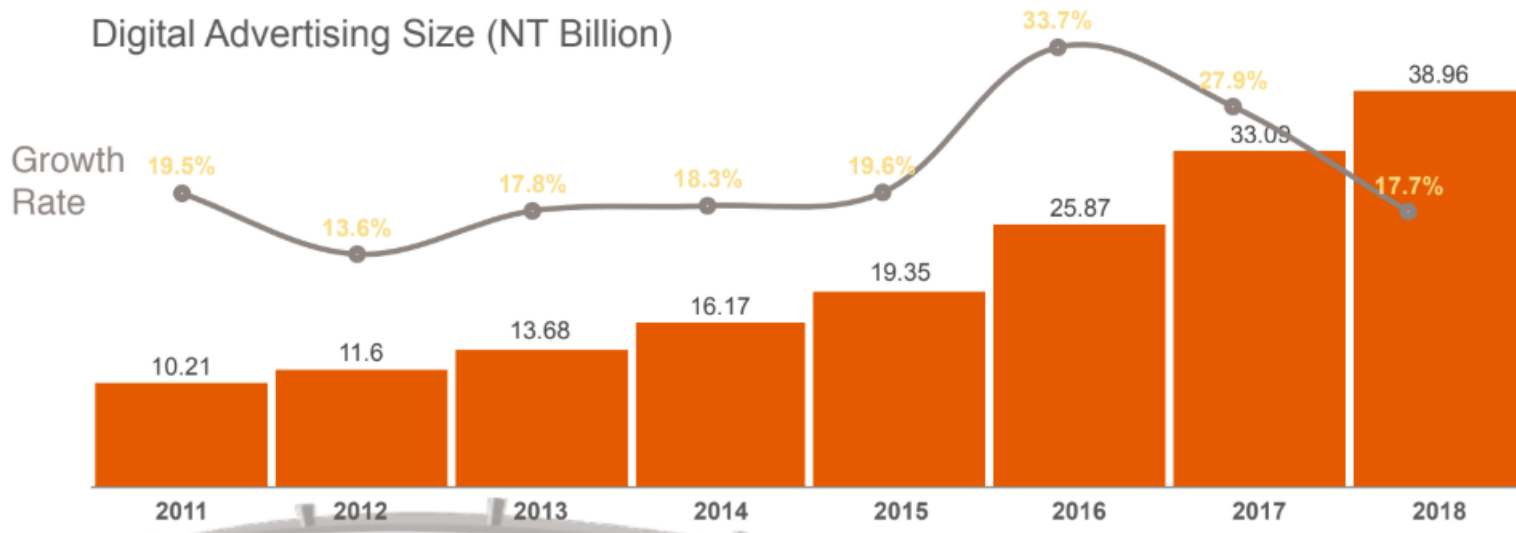
Assemble!

- Fake accounts
- Transfer the battlefield of public opinions
- Push articles routinely by program
- The economy of digital advertisement (1/10)

Traditional  
media

Social  
media

Digital Advertising Size (NT Billion)



Total  
Advertising  
Size

**38.96** NTBillion

The highest  
growth rate by  
industry —  
Government

**125%**

Mobile



**71.8%**



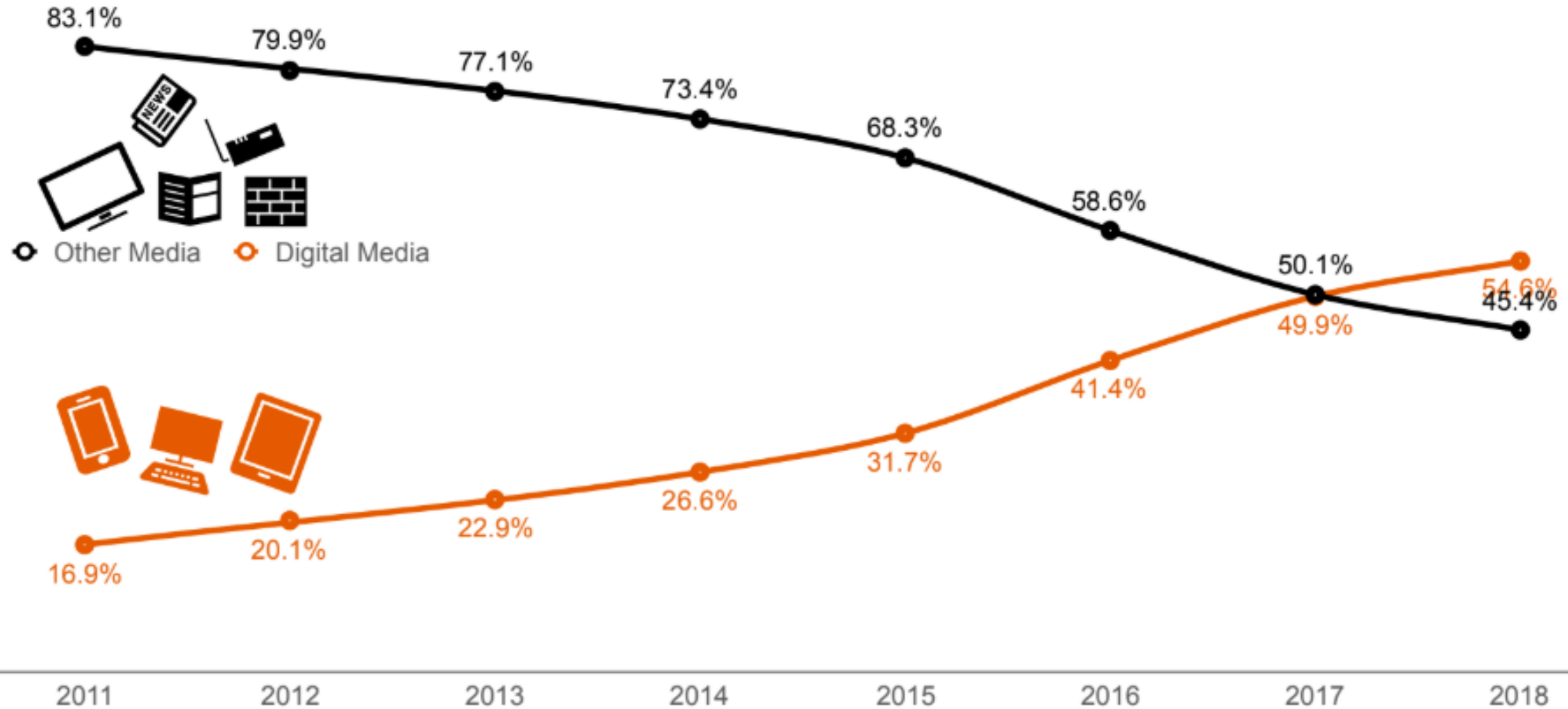
**28.2%**

Desktop



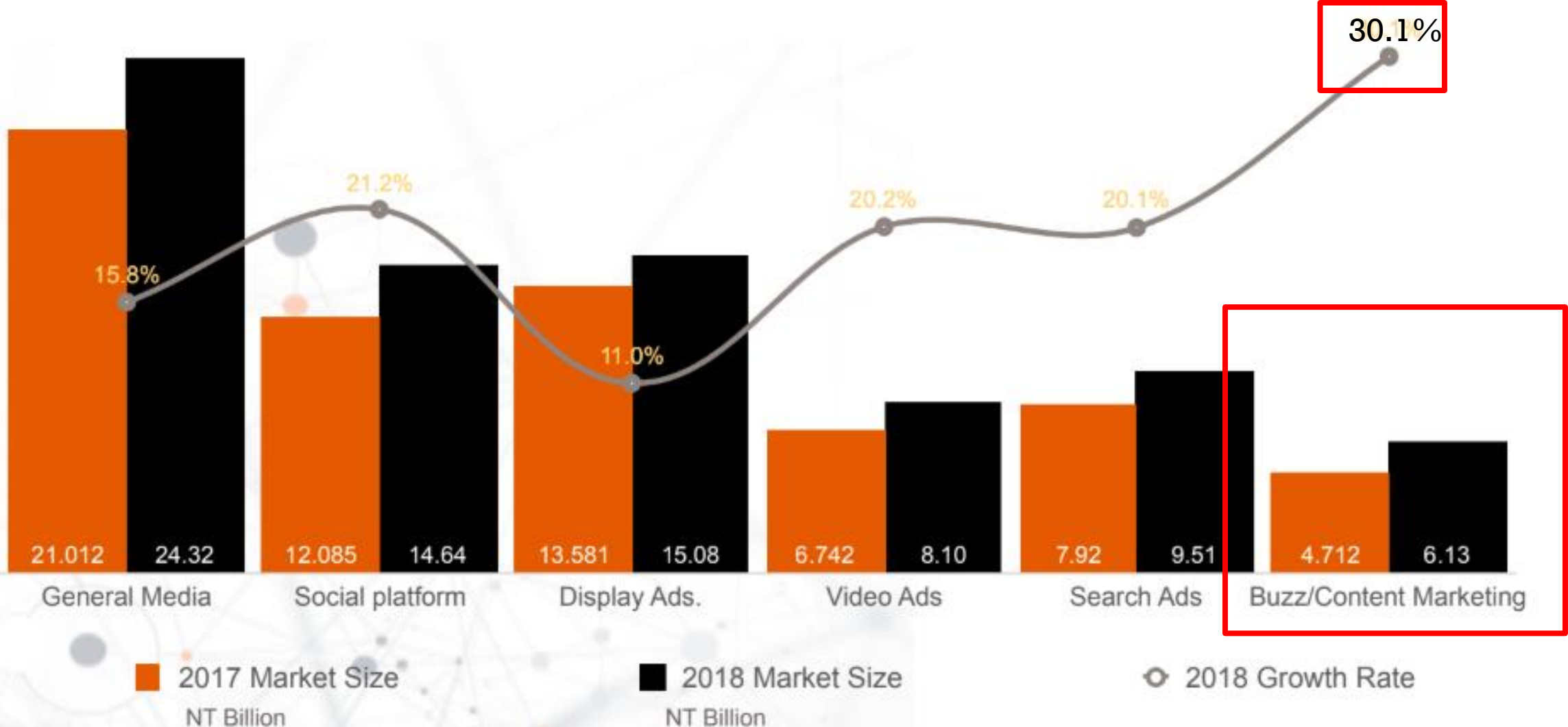
# 2018 Digital Media Advertising vs. Other Media Advertising of Taiwan (By Percentage)

DMA  
Taiwan Digital Media and Marketing Association

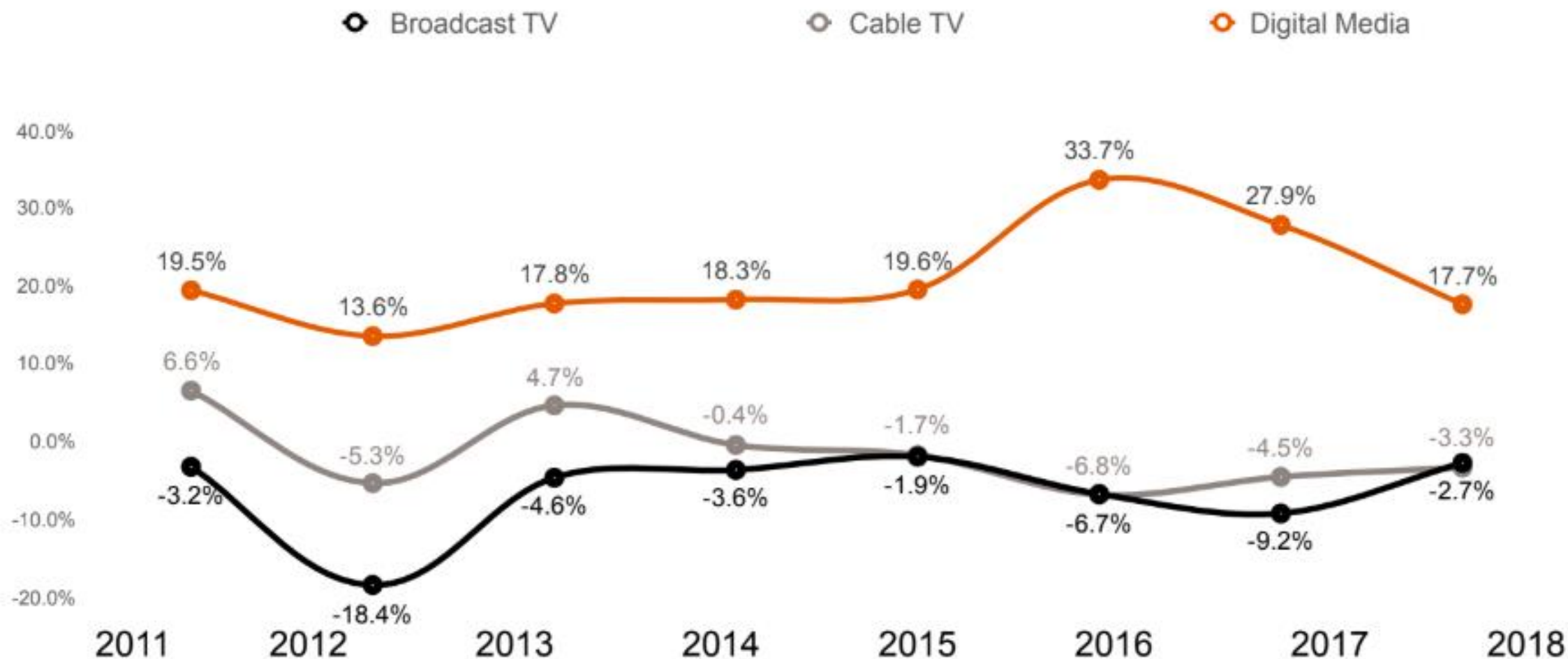


Source: DMA (Taiwan Digital Media and Marketing Association)

# The Growth Rate of Taiwan Digital Advertising by Type



# 2011~2018 The Growth Rate of Digital Media Advertising and Other Media Advertising of Taiwan



Source: DMA (Taiwan Digital Media and Marketing Association)



# OTHER EVENTS HAPPENED IN TAIWAN

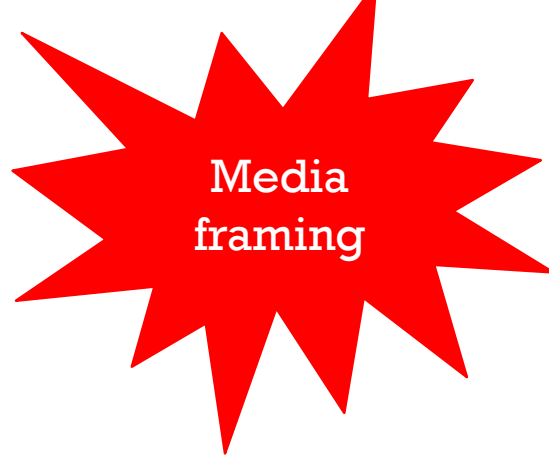
- The legalization of same-sex marriage
- 2014 Taiwan mayor election(*Computational Propaganda in Taiwan: Where Digital Democracy Meets Automated Autocracy*)
  - AI technology
  - Text mining
  - Sentimental analysis
  - Personal texts
- The smuggling of cigarette of National Security Bureau in 2019.7
- The protest in Hong Kong now
- The spy case of Wang Li-qiang
- The murder case of Chen Tong-jia
- The mansion case of Han Kuo-yu (claimed for the civilian status)
- Recheck the old cases and find something illegal to against opposite



# THE SUICIDE CASE OF CYBER WARRIOR IN SEP.

- Super Typhoon Jebi destroyed the Kansai airport, Japan
- Some information claimed that the other government sent the bus to pick up its national but the Taiwan Representative Office at Osaka did nothing.
- The account, “idcc,” emerged at the website, “PTT,” and start to attack the representative.
- The representative couldn’t afford the pressure and suicided after the tremendous public opinions targeting him.
- The account was manipulated by someone and the prosecutor found that one of the IP Address was located at the Legislature Yuan.





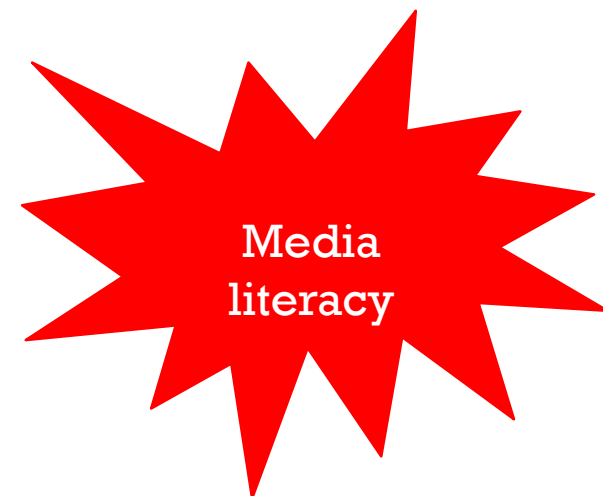
The suicide case of Taiwan (2018.9.14)



The owner of BBS announced that they stopped to receive any account apply after 2018.9.15



Taiwan election(2018.11.14)





# **POLARIZATION OF POLITICAL OPINION BY NEWS MEDIA**



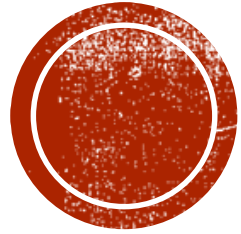
Chung-Jui Lai<sup>a</sup>

<sup>a</sup>Wanhua Precinct, Taipei City Police Department, Taiwan

# OUTLINE

- Introduction
  - Political Opinion Mining on Presidential Election
  - Sentimental Analysis
- Study Framework
  - Data Collection
  - Data Filtering & Select Criteria
- Data Analysis (4 models)
- Conclusion





**INTRODUCTION**

**-POLITICAL OPINION MINING**

**-SENTIMENTAL ANALYSIS(LIWC)**

# POLITICAL OPINION MINING on presidential election

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## The evaluation of social media.

(e.g. Facebook, WhatsApp, Instagram, Weibo)

Popularity  
Massive usage  
(posting, sharing)



## The advantage of social media.

Immediately  
Widespread



## The disadvantage of social media.

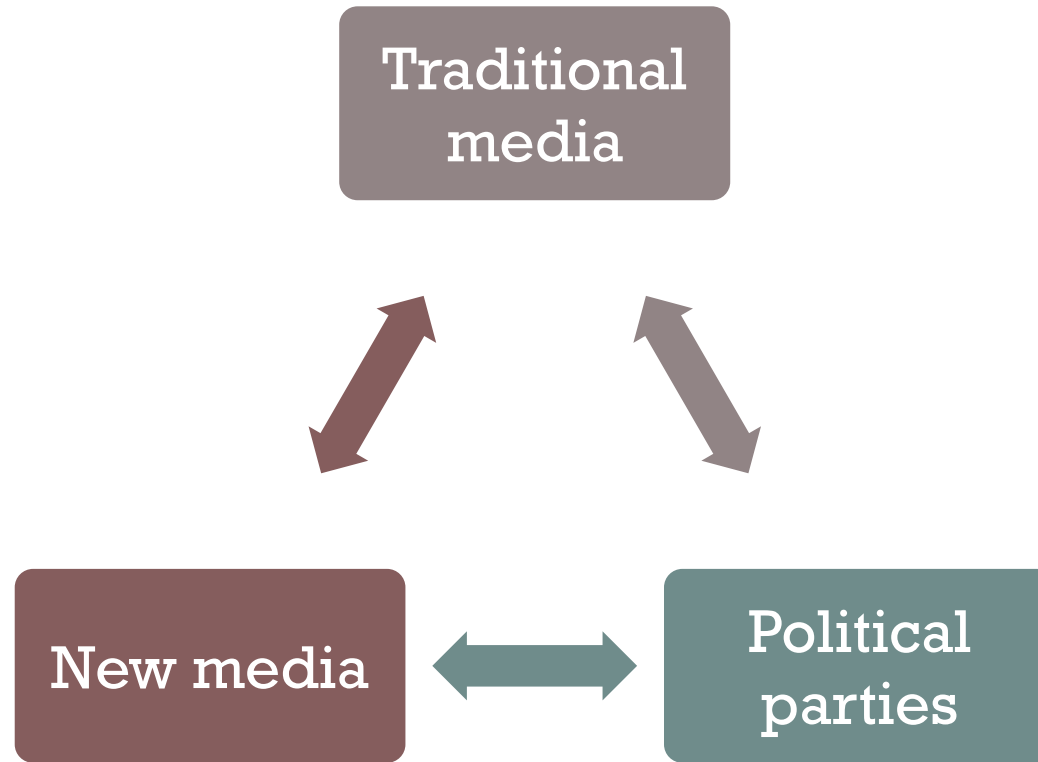
Preconception  
Disinformation content  
(partial opinion)





# THE TRI-RELATIONSHIP OF TRADITIONAL MEDIA, NEW MEDIA, AND POLITICAL PARTIES

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LIWC (Linguistic Inquiry Word Count) is a software that can analyze the percentage of variables and reflect different emotions, thinking styles etc. within the text.

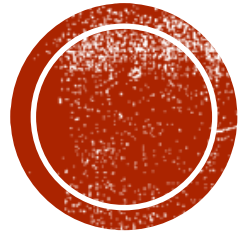
### Why using LIWC?

- The power of **text analysis**.
- The **dictionary** of LIWC contains almost 6,400 words.
- The clear classification of LIWC **dimensions**.(for example)
  - 1.**Affect Words** (e.g. positive emotion, negative emotion)
  - 2.**Social Words** (e.g. family, friends, male and female referents)
  - 3.**Time Orientation** (e.g. past, present, future focus)
  - 4.**Informal Speech** (e.g. swear words)

## SENTIMENTAL ANALYSIS (LIWC)

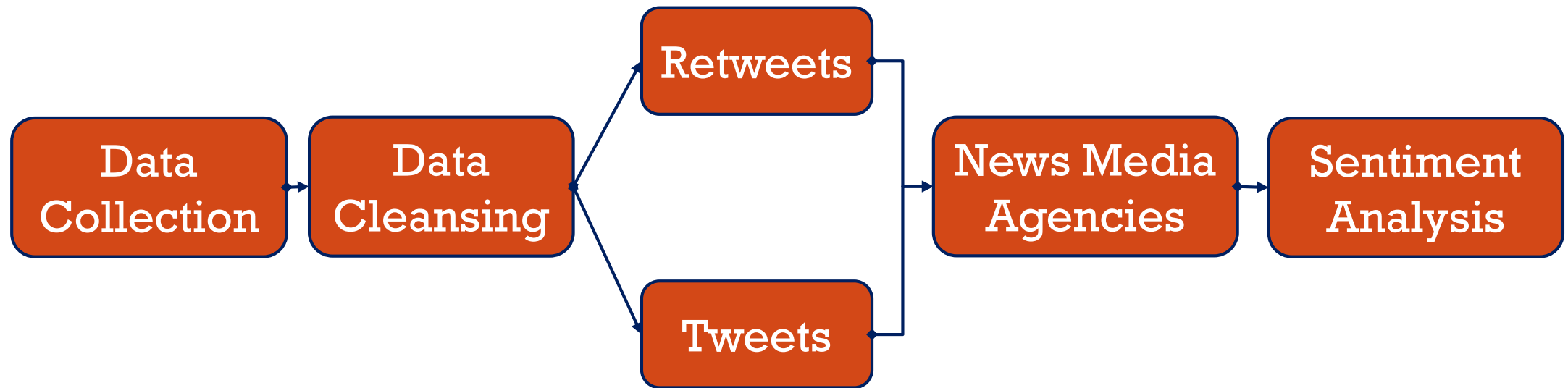


# **STUDY FRAMEWORK**



- DATA COLLECTION (TWITTER)**
- DATA FILTERING & SELECT  
CRITERIA**

# PROCESS OF THE STUDY FRAMEWORK





# DATA COLLECTION with PYTHON CODE



Keyword: Trump

- Twitter Developer for analyzing tweets.
- Using Twitter Stream API, “tweepy,” to collect the tweets within Twitter.
- Stream API can catch the prompt tweets that contain the keyword we select.

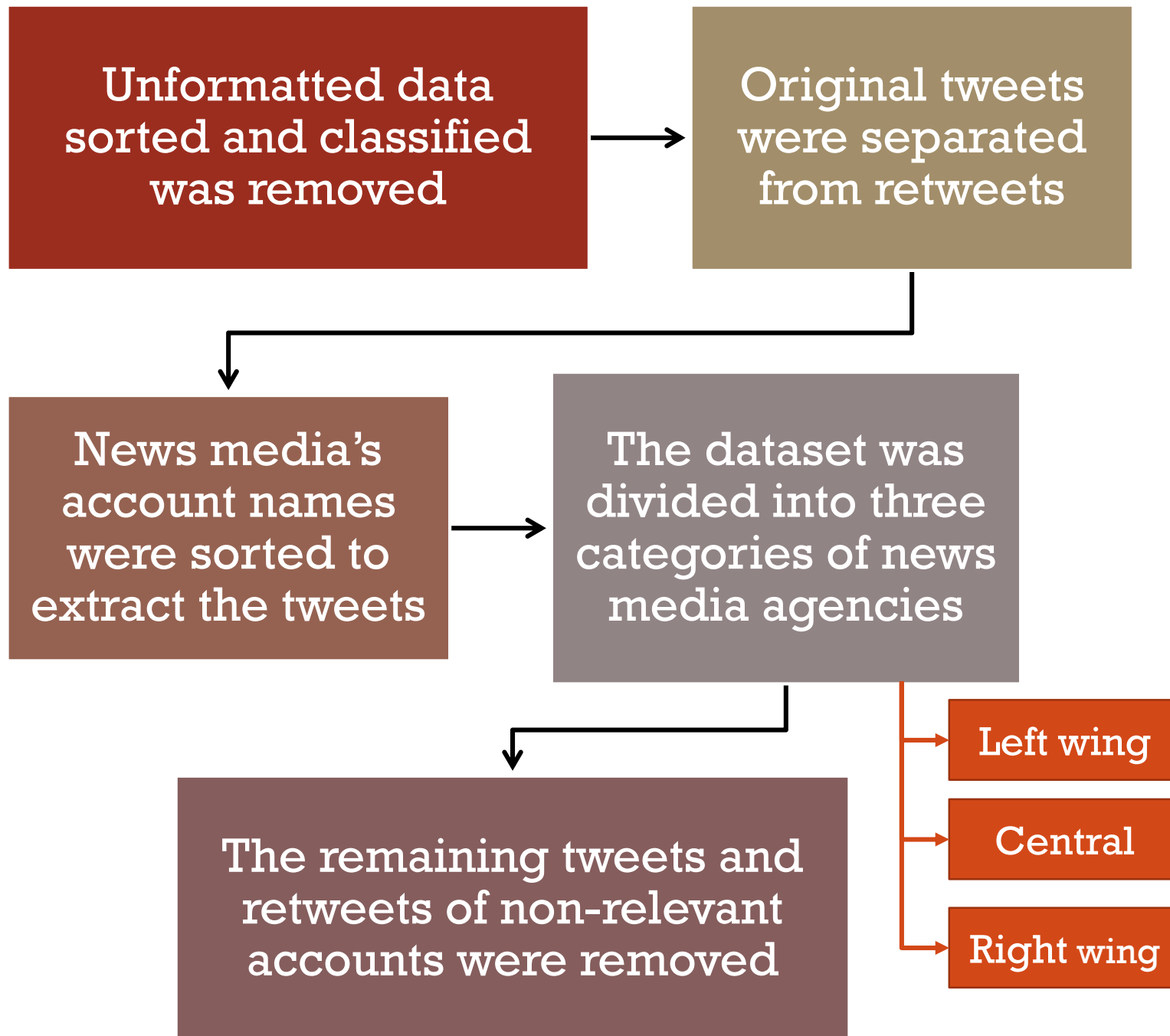


- Date : 2019-09-11 14:10:10
- User\_name : @BBCWorld
- User\_followers : 25751623
- User\_location : London, UK
- Text : “Today our nation honours and mourns the nearly 3,000 lives that were stolen from us” President Trump pays tribute to the victims of the 9/11 attacks in US

	Tweets	Retweets	Total
Total	211,249 (25.42%)	619,764 (74.58%)	831,013 (100%)

The example of the tweet & the collection amount





## DATA FILTERING & SELECT CRITERIA



# THE CATEGORIES OF NEWS MEDIA AGENCIES

Category	Tweets	Example
Left-Wing	850 (63.24%)	Alternet, CNN Opinion, Democracy Now, The Daily Beast, The Huffington Post, The Intercept, Jacobin, Mother Jones, MSNBC, The New Yorker, The New York Times Opinion, The Nation, Slate, Vox, Mashable, ABC, The Atlantic, BuzzFeed News, CBC, CNN Online News, The Economist, The Guardian, NBC, The New York Time Online News, NPR Opinion, Politico, TIME, The Washington Post, CBS, The Daily Show, Newsweek, VanityFair
Right-Wing	158 (11.76%)	Fox News Online News, Reason, The Wall Street Journal Opinion, Examiner, The Washington times, The American Spectator, Breitbart, The Blaze, CBN, The Daily Caller, Daily Mail, The Daily Wire, Fox News Opinion, The Federalist, National Review, New York Post, Newsmax
Central	336 (25%)	AP, Reuters, Bloomberg, The Christian Science Monitor, The Hill, BBC, USA Today, The Wall Street Journal Online, NPR Online News
Total	1,344 (100%)	



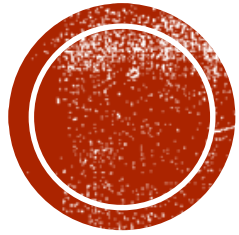
# **DATA ANALYSIS**

**-COGNITIVE LOADS**

**-AFFECTIVE PROCESSES**

**-ANALYTICAL THINKING STYLES**

**-PROFILE OF POLITICAL SENTIMENT**







Sentiment analysis by text mining using LIWC



Logistic Regression  
( left-wing is set as 0 ).

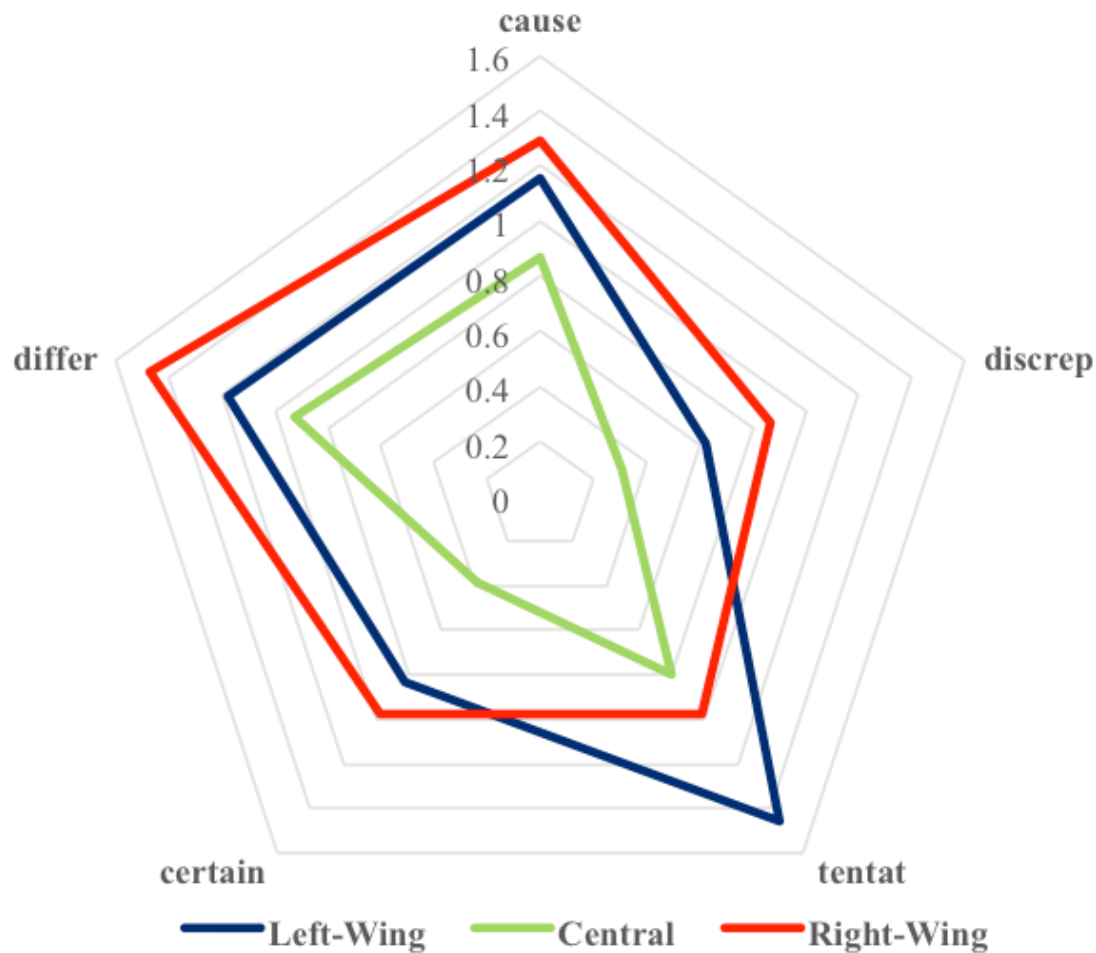


Data Visualization with radar chart.

# DATA ANALYSIS METHODS



# COGNITIVE LOADS



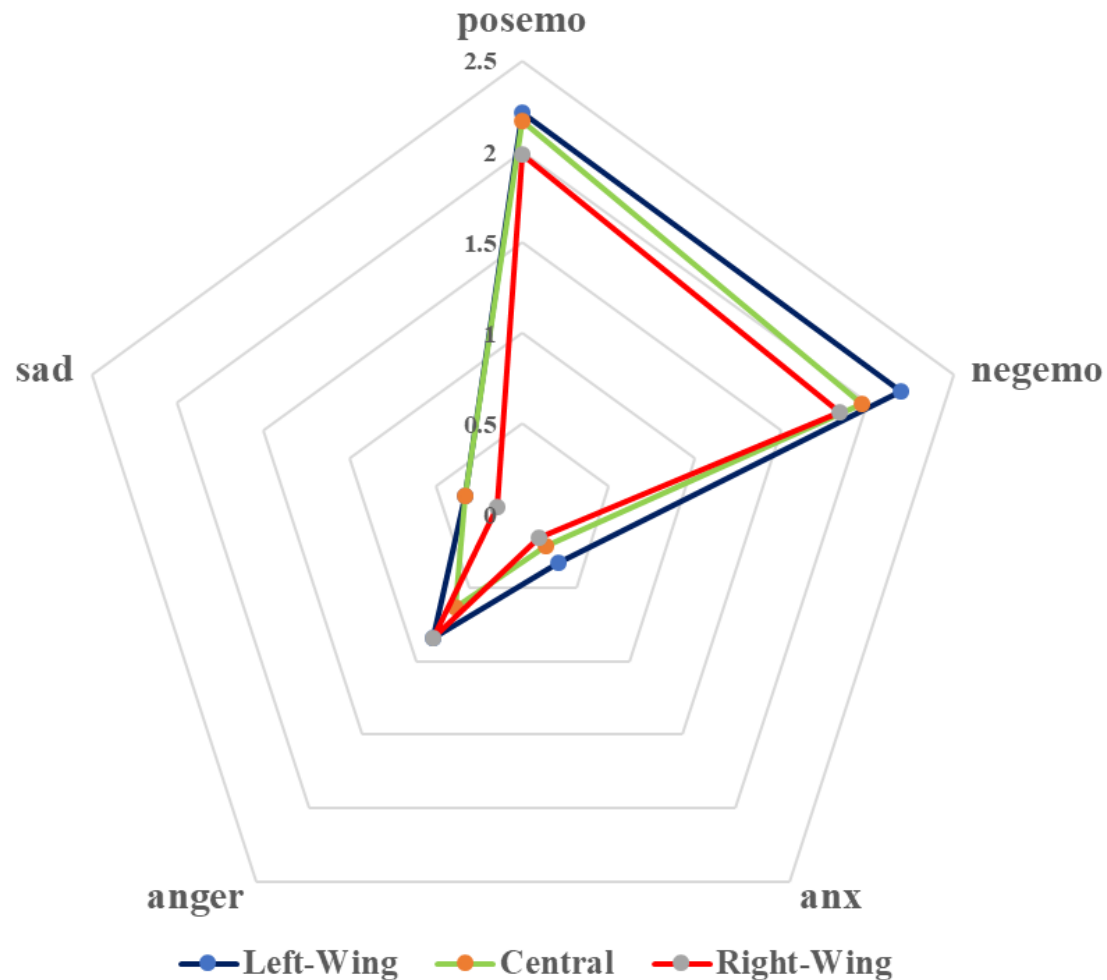
## Logistic regression of cognitive loads

Coefficients	Estimates	St. Error	Z-value
Intercept	-1.649	.124	-13.269***
Cogproc	-.102	.028	-3.679**
Cause	.129	.048	2.710**
Discrep	.169	.054	3.088**
Tentat	-.048	.050	-.971
Certain	.068	.046	1.483
differ	.155	.047	3.313***

Note: \*\*\*:  $p < .001$ , \*\*:  $p < 0.01$ , \*:  $p < 0.05$



# AFFECTIVE PROCESSES



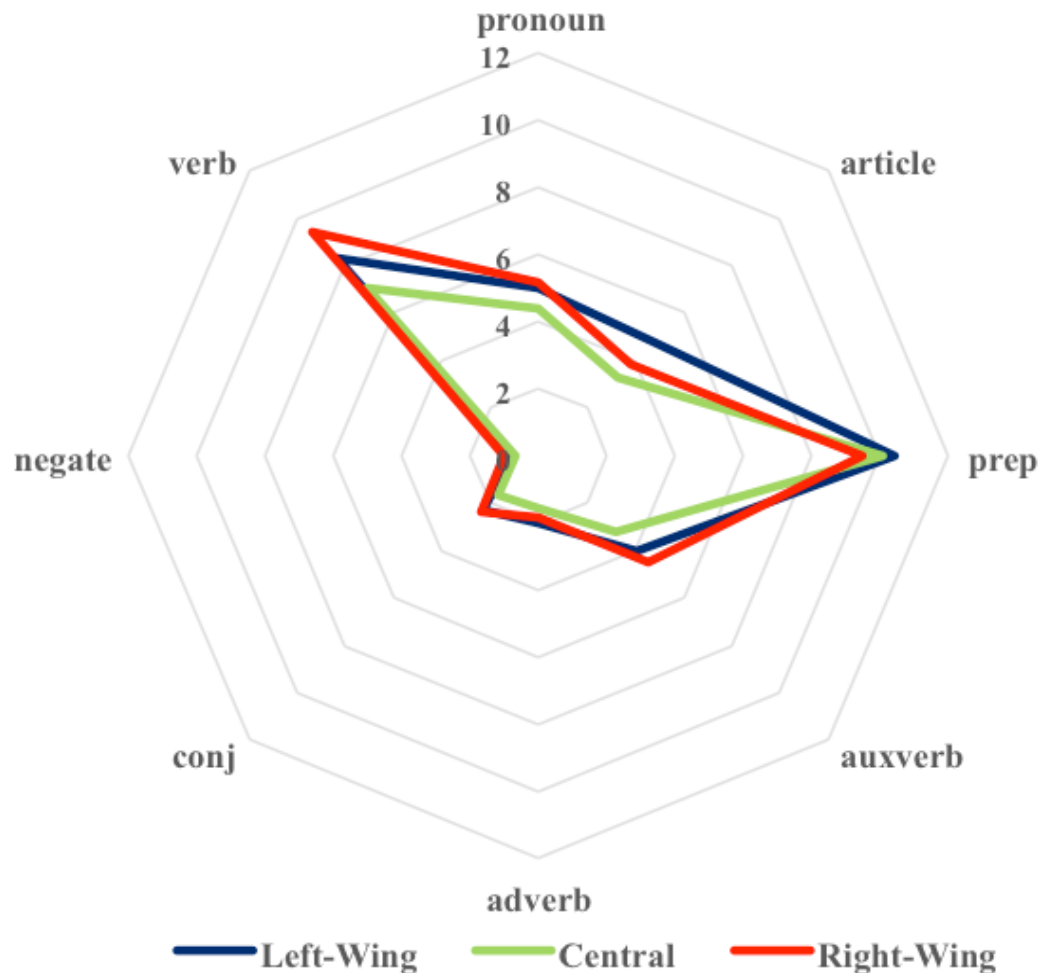
## Logistic regression of affective processes

Coefficients	Estimates	St. Error	Z-value
intercept	-1.489	.123	-12.089***
Affect	-.294	.226	-1.299
Posemo	.257	.228	1.129
Negemo	.290	.230	1.259
Anx	-.197	.111	-1.770
Anger	.011	.061	.173
sad	-.244	.129	-1.890

Note: \*\*\*:  $p < .001$ , \*\*:  $p < 0.01$ , \*:  $p < 0.05$



# ANALYTICAL THINKING STYLES



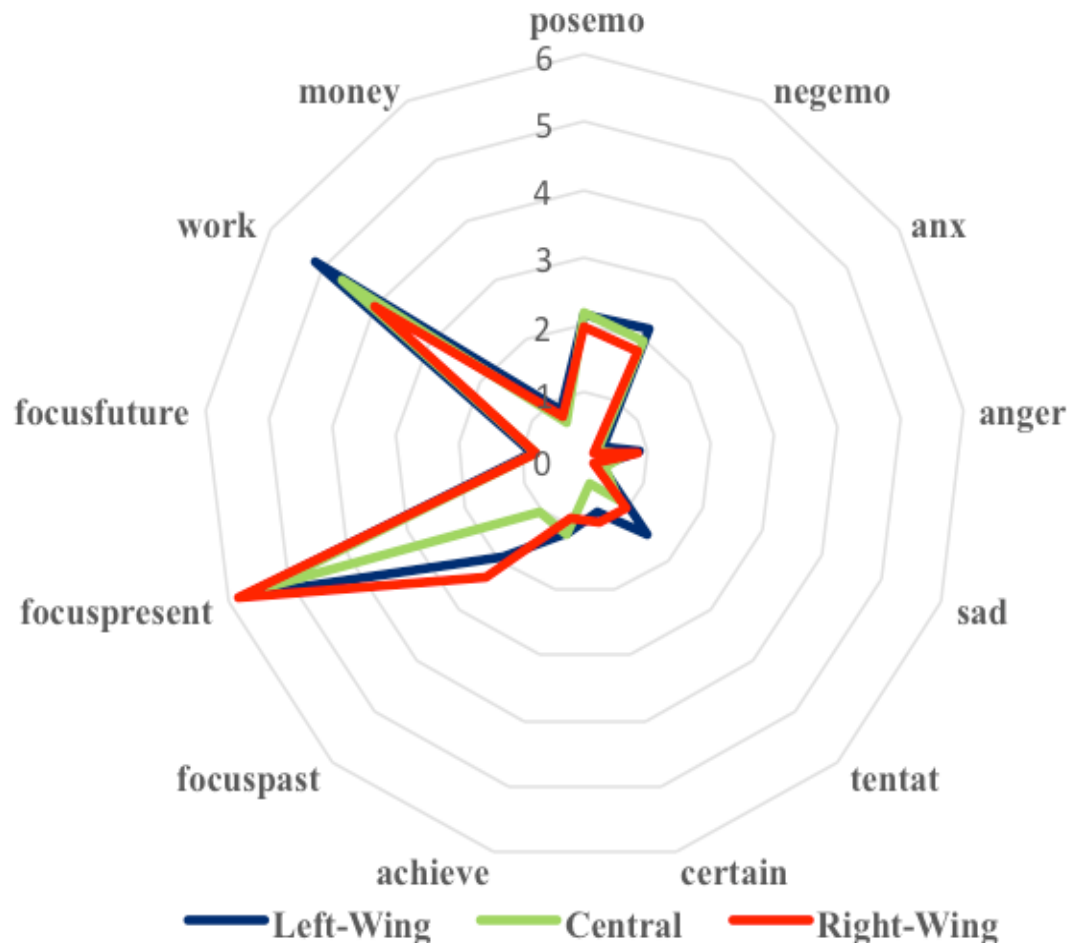
## Logistic regression of analytical thinking styles

Coefficients	Estimates	St. Error	Z-value
Intercept	-1.442	.232	-6.212***
Pronoun	-.025	.019	-1.303
Article	-.066	.024	-2.781**
Prep	-.030	.017	-1.708
Auxverb	-.006	.033	-.177
Conj	.018	.030	.602
negate	.042	.052	.807
Verb	.046	.022	2.067*

Note: \*\*\*:  $p < .001$ , \*\*:  $p < 0.01$ , \*:  $p < 0.05$



# PROFILE OF POLITICAL SENTIMENT



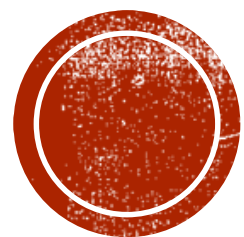
## Logistic regression of profiles of political sentiment

Coefficients	Estimates	St. Error	Z-value
Intercept	-1.442	.176	-8.213***
Focuspast	.068	.028	2.442*
Focusfuture	-.033	.050	-.658
Posemo	-.024	.032	-.736
Negemo	-.012	.047	-.260
Sad	-.281	.133	-2.116*
Anx	-.150	.112	-1.337
Anger	.013	.062	.206
Certain	.031	.045	.695
Work	-.05	.022	-2.192*
Money	.002	.046	.050

Note: \*\*\*:  $p < .001$ , \*\*:  $p < 0.01$ , \*:  $p < 0.05$

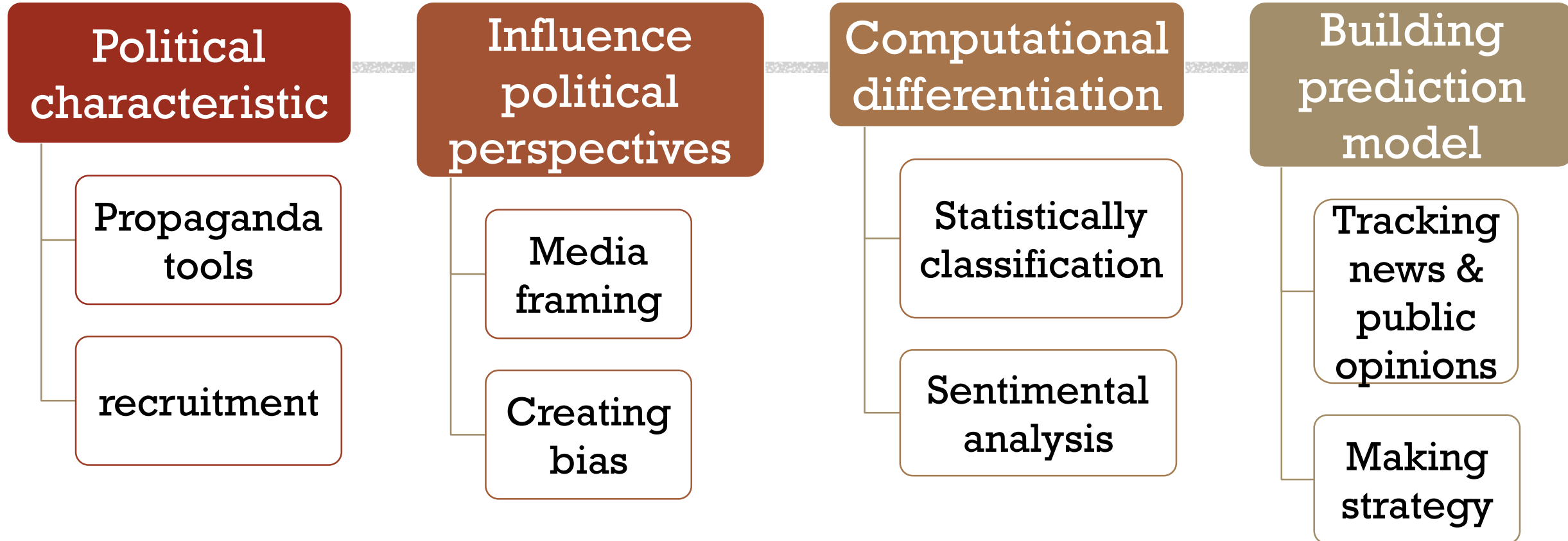






# CONCLUSION





# REFERENCE

- Allsides.org media bias rating: <https://www.allsides.com/media-bias/media-bias-ratings>
- Tumasjan, A., T.O. Sprenger, P.G. Sandner, and I.M. Welp. Predicting elections with Twitter: What 140 characters reveal about political sentiment. in Proceedings of the Fourth International AAI Conference on Weblogs and Social Media (ICWSM'10). 2010. Washington, DC: Association for the Advancement of Artificial Intelligence, 178-185.
- Tripathi, G. and N. S. Opinion mining: A review. International Journal of Information & Computation Technology, 2014. 4(16): 1625-1635.
- Yu, B., S. Kaufmann, and D. Diermeier. Exploring the characteristics of opinion expressions for political opinion classification. in Proceedings of the 9th Annual International Digital Government Research Conference. 2008. Montreal, Canada, 82-91.
- Tumasjan, A., T.O. Sprenger, P.G. Sandner, and I.M. Welp. Election forecasts with Twitter: How 140 characters reflect the political landscape. Social Science Computer Review, 2011. 29(4): 402-418.
- Stieglitz, S. and L. Dang-Xuan. Political communication and influence through Microblogging- An empirical analysis of sentiment in Twitter messages and retreat behavior. in Proceedings of the 2012 45th Hawaii International Conference on System Sciences (HICSS'45). 2012. Hawaii: IEEE Computer Society, 3500-3509.
- Dang-Xuan, L. and S. Stieglitz. Impact and diffusion of sentiment in political communication- An empirical analysis of political Weblogs. in Proceedings of the 2012 Sixth International AAI Conference on Weblogs and Social Media (ICWSM'12). 2012. Dublin, Ireland: Association for the Advancement of Artificial Intelligence, 427-430.

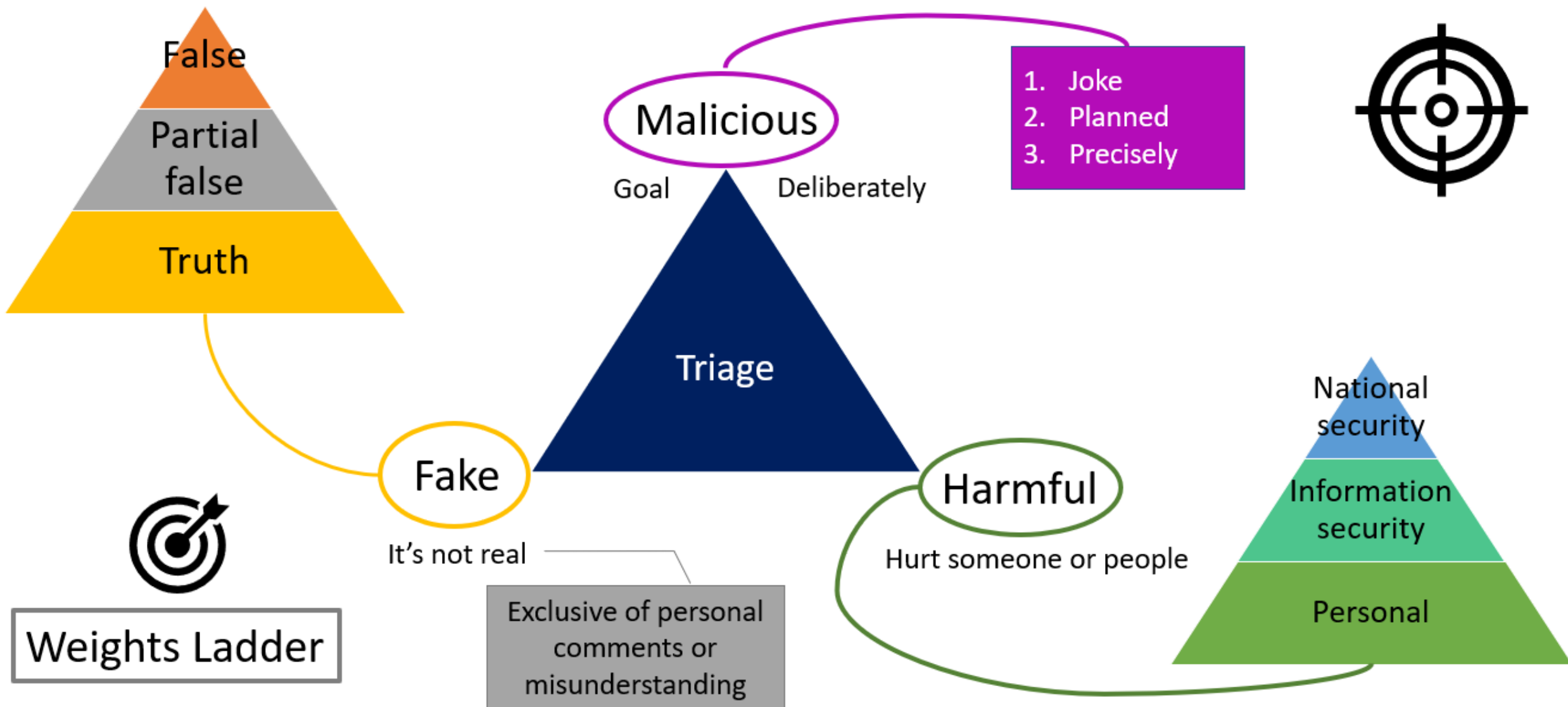


# REFERENCE(cont.)

- Stieglitz, S. and L. Dang-Xuan. Impact and diffusion of sentiment in public communication on Facebook. in Proceedings of the 2012 European Conference on Information Systems (ECIS 2012). 2012. Association for Information Systems (AIS), 1-13.
- Wang, H., D. Can, A. Kazemzadeh, F. Bar, and S. Narayanan. A system for real-time Twitter sentiment analysis of 2012 U.S. presidential election cycle. in Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics (ACL'12). 2012. Jeju Island, Republic of Korea: Association for Computational Linguistics, 115-120.
- Nooralahzadeh, F., V. Arunachalam, and C. Chiru. 2012 Presidential elections on Twitter- An analysis of how the US and French election were reflected in tweets. in Proceedings of the 2013 19th International Conference on Control Systems and Computer Science. 2013. Bucharest, Romania: IEEE.
- Alashri, S., S.S. Sandala, V. Bajaj, E. Parriott, Y. Awazu, and K.C. Desouza. The 2016 US Presidential election on Facebook: An exploratory analysis of sentiments. in Proceedings of the 2018 51st Hawaii International Conference on System Sciences (HICSS'51). 2018. Waikoloa Village, Hawaii Big Island: University of Hawaii, 1771-1780.
- Jordan, K.N., J.W. Pennebaker, and C. Ehrig. The 2016 U.S. Presidential candidates and how people tweeted about them. Special Collection: SMAPP Global Special Issue, 2018: 1-8.
- Pennebaker, J.W., R.L. Boyd, K.N. Jordan, and K. Blackburn. The development and psychometric properties of LIWC2015, 2015. by University of Texas at Austin.

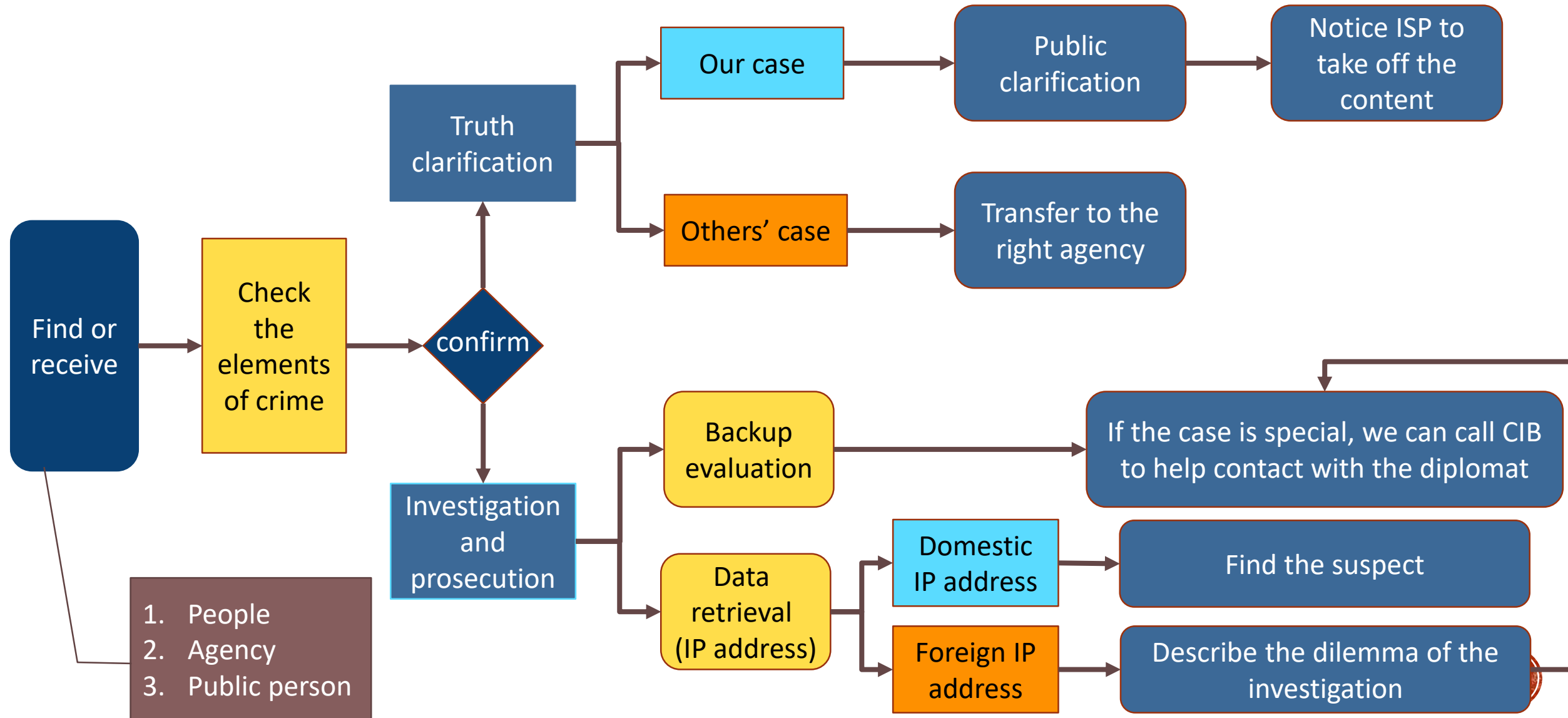


# HOW TO TARGET THE FAKE NEWS IN TAIWAN?





# HOW WE POLICE DEAL WITH THIS ISSUE?



400 messages

留言 (400)

撰寫留言前，請先 [登入](#)

熱門 最多關注 最新

莊文薏 昨天17:11 | 檢舉

**HOT** 正常現象

傻逼才會當真

臉書上不也是

看照片

迷倒千軍萬馬

見本尊

嚇跑佰萬雄兵

28

1107

28

大鯊仔(i\_k) 昨天18:07 | 檢舉

**HOT** 男人愛什麼給什麼啊

很意外嗎？

8

654

24

熱門 最多關注 最新

小林 Moxbii 4小時前 | 檢舉

**HOT** 水餃:幹嘛針對我

如果常外食，應該沒什麼食物是鈉含量低的吧...還是多喝水多運動才是王道

4

166

2

俊穎 3小時前 | 檢舉

**HOT** 我是覺得美食當前不吃才比較傷心

3

135

6

megan 4小時前 | 檢舉

**HOT** 常外食，都是鈉含量高的食物

只能有空時自己煮，多運動囉！

1

82

0

日光貓... 3小時前 | 檢舉

笑話，對在外奔波勞碌的人來說這是廢文，對年老無收入.吃老本的人也是廢文，有錢有閒誰不想長命百歲，享受生命。

3

79

8

# The clues of fake news in Taiwan

The instant messages. (ex. news media, LINE Today...)



228messages 152shares



1,846messages 1,085shares



183messages 108shares

# The clues of fake news in Taiwan

Social media (ex. News, parties, clubs, internet celebrity in Facebook)



# The clues of fake news in Taiwan

YouTube channels

發燒影片 #1  
因病暫停活動一個月 🤒 希望能早點恢復工作！ | [redacted]

觀看次數：1,105,819次 · 2019年12月7日

👍 2.4萬 🗨️ 1025

[redacted]  
87.1萬 位訂閱者

任何合作邀約請洽 Pressplay Email :  
[redacted]

顯示完整資訊

1,830 則留言 排序依據

1,830 messages

推 [redacted] 不分區沒意外前10都會上 [redacted] 12/09 14:54  
 → [redacted] K: 躺著也會上 XDDDD [redacted] 12/09 14:55  
 → eipadric: 不是什麼尊重婦女? [redacted] 12/09 14:55  
 推 [redacted]: [redacted] 專長不是台灣警察 [redacted] 12/09 14:55  
 → [redacted]: [redacted] 專長不是台灣警察 [redacted] 12/09 14:55  
 → [redacted]: [redacted] 專長不是台灣警察 [redacted] 12/09 14:55  
 推 [redacted]: 第五的專業是為黨辯護XD [redacted] 12/09 14:55  
 → [redacted]: 我聽到就想 幹怎麼可能 [redacted] 12/09 14:55  
 推 [redacted]: 身為警大教員, 連自己的專業都搞錯 [redacted] 12/09 14:56  
 → [redacted]: 這…… [redacted] 12/09 14:56  
 → [redacted]: 我朋友也說保警不是警察? [redacted] 12/09 14:56  
 × 編輯: [redacted] 臺 [redacted] 12/09 14:57  
 ( 灣), 12/09/2019 14:57:57  
 推 [redacted]: 警大叫獸 爛到有刺 [redacted] 12/09 14:57  
 推 [redacted]: 意外嗎 [redacted] 12/09 14:57  
 → [redacted]: 戰後嬰兒潮掌權的這群老人 真的是最 [redacted] 12/09 14:58  
 推 [redacted]: 這一般的警界人事應該都知道吧 [redacted] 12/09 14:58  
 推 [redacted]: 國民黨不分區名單真的是在羞辱華國選民 [redacted] 12/09 14:59  
 → [redacted]: 對社會沒有貢獻 卻又掠奪多數社 [redacted] 12/09 14:59  
 → [redacted]: 他是腦袋一時打結還是刻意誤導 [redacted] 12/09 14:59  
 → [redacted]: 會資源的一群 [redacted] 12/09 14:59  
 → [redacted]: 國民黨所謂的專長就是沒專業, 從總統到不 [redacted] 12/09 14:59  
 → [redacted]: 分區立委候選人 [redacted] 12/09 15:00  
 → [redacted]: 每次當DPP爛到讓人民忍無可忍時, KMT就 [redacted] 12/09 15:00  
 → [redacted]: 她的專業是 [redacted] 不是中華民國的警察吧 [redacted] 12/09 15:00

## 批踢踢實業坊

熱門看板

分類看板

Gossiping	14454	綜合	◎【八卦】PTT好卡, 伺服器又抽風
C_Chat	3730	閒談	◎[希洽] (4+1)等分討論文注意防雷
NBA	3199	籃球	◎[NBA] 新版板規3-3出爐惹~
Stock	2401	學術	◎[股版]發文請先詳閱版規
Lifeismoney	2050	省錢	◎[省錢] 省錢板
Baseball	1717	棒球	◎[棒球] 2019亞洲冬季棒球聯盟
HatePolitics	1593	Hate	◎[政黑] 第三勢力登陸戰活動開跑
Game	1184	遊戲	◎[Game] 共襄盛舉, 全民具器排賽冠軍

# The clues of fake news in Taiwan

Social websites (e.g. BBS, PTT, )



The  
prevention  
methods  
in  
Taiwan



Cofacts



MyGoPen



Mei Yu Yi

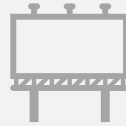


Rumor & Truth

# The prevention methods in Taiwan



Google forbids any political advertisement during the 2020 election.



Facebook shows the contributor of the advertisement.



Taiwan Factcheck Center

1. Reported 2. Media concern 3. misinformation



Line Rumor Beat

# The Dilemma & Difficulty



Law (legal the business, news media exclusive of other people)



Jurisdiction in Taiwan



Technology (VPN, private group)

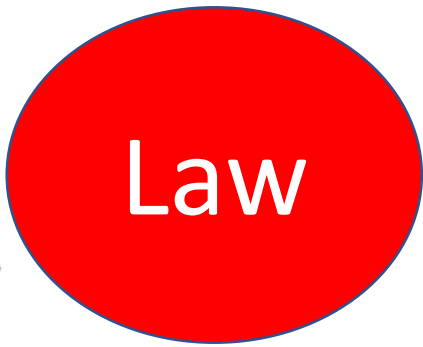
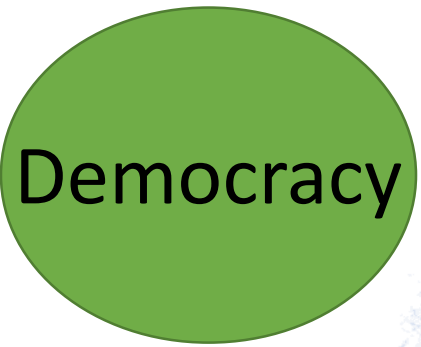


Some Companies are not cooperative.



Tons of messages(include pictures, videos) have to be checked.

Limited  
resources



Freedom of speech

Freedom of news

The profits of the public

The prevention of crime

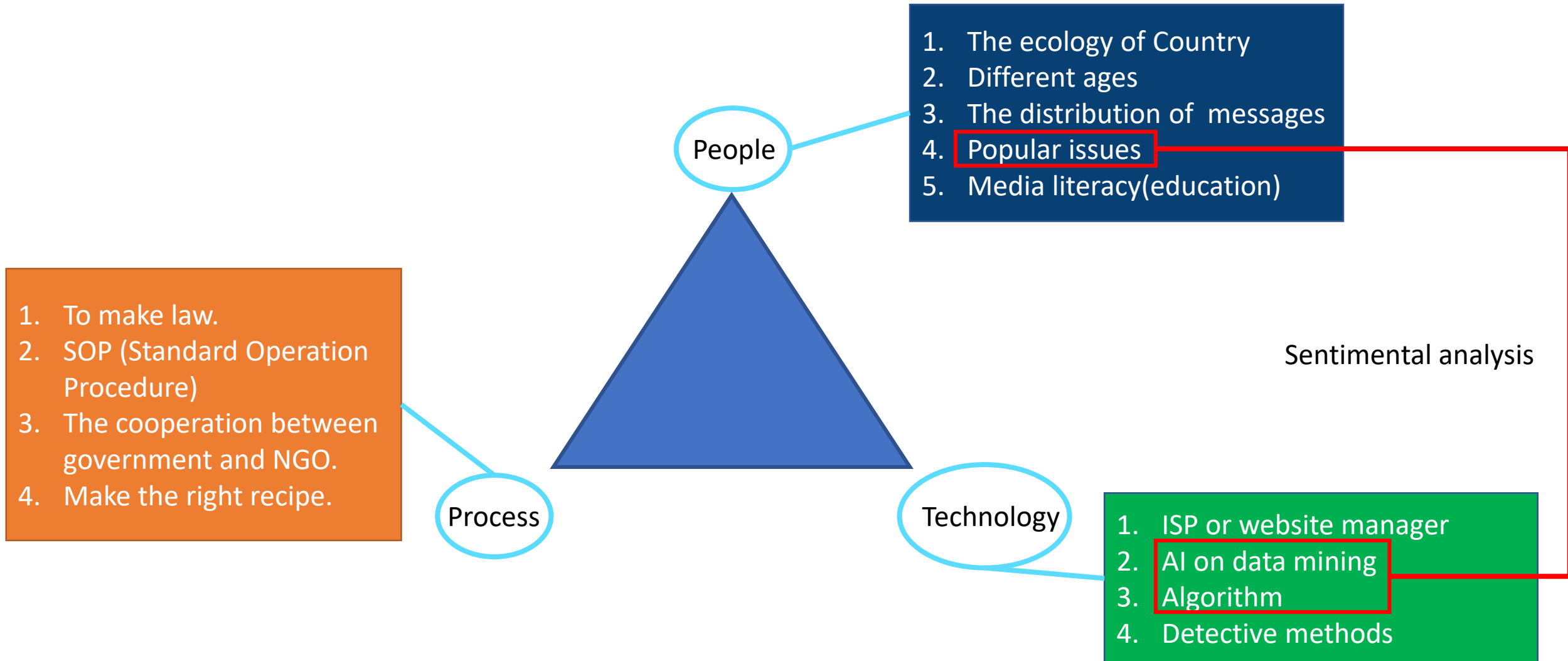


Both ends of the balance

How can we do?

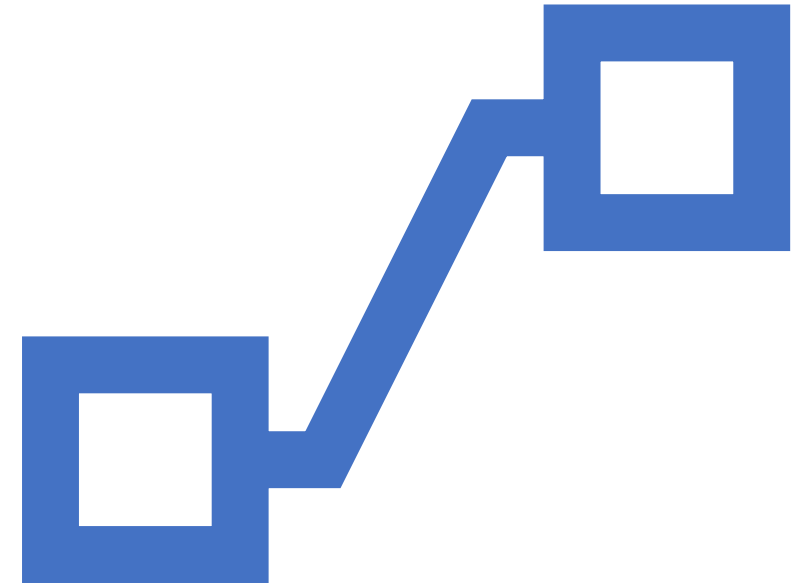
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# People, Process, Technology





# Conclusion



To the issue itself, we must have our judgement and thoughts!

Thanks for listening!  
Have a nice day!

