Business Analytics Capstone Framework for Strategy

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07/18/2016

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Problem Statement

Problem Statement
Executive Summary

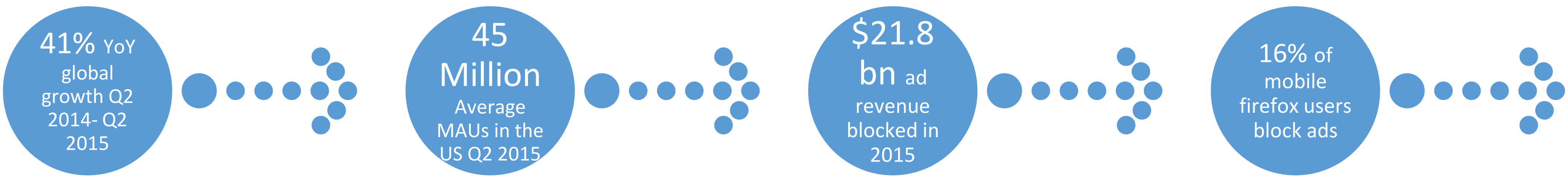
- With 200 million downloads and counting, ad blockers are growing in popularity
- Ad blockers prevents websites from generating their main source of revenue - advertising revenue
- Diminishing ad revenues – up to 9% of revenue lost for US publishers
- Revenue dilution induces a negative spiral encompassing the business, customers, end-users and socio-economic factors
- With specific reference to Yahoo!, the organization has seen its revenues fall by almost 14% from 2015. This leads to a spiral effect on Yahoo's internal organization
- The following slides highlight the effect on Yahoo's business

Problem Statement

What is ad blocking?

Ad blocking extensions, browsers, VPNs or DNS solutions act like a firewall between the web browser and all known ad servers. Most ads are blocked by open-source web browser extensions, installed by end users. The database of blocked ad servers is curated by a large and active open source community. The most popular ad block extensions are “Adblock Plus” and “AdBlock”. Once installed, these extensions automatically block ads on all websites and are effective against almost all ad formats.

Key Insights
More consumers block ads, continuing the strong growth rates seen during 2013 & 2014



- Globally, the number of people using ad blocking software grew by 41% year over year.
- 16% of the US online population blocked ads during Q2 2015.
- Ad block usage in the United States grew 48% during the past year, increasing to 45 million monthly active users (MAUs) during Q2 2015. Ad block usage in Europe grew by 35% during the past year, increasing to 77 million monthly active users during Q2 2015.
- The estimated loss of global revenue due to blocked advertising during 2015 was $21.8B.
- With the ability to block ads becoming an option on the new iOS 9, mobile is starting to get into the ad blocking game. Currently Firefox and Chrome lead the mobile space with 93% share of mobile ad blocking

PAGEFAIR AND ADOBE | 2015 Ad Blocking Report

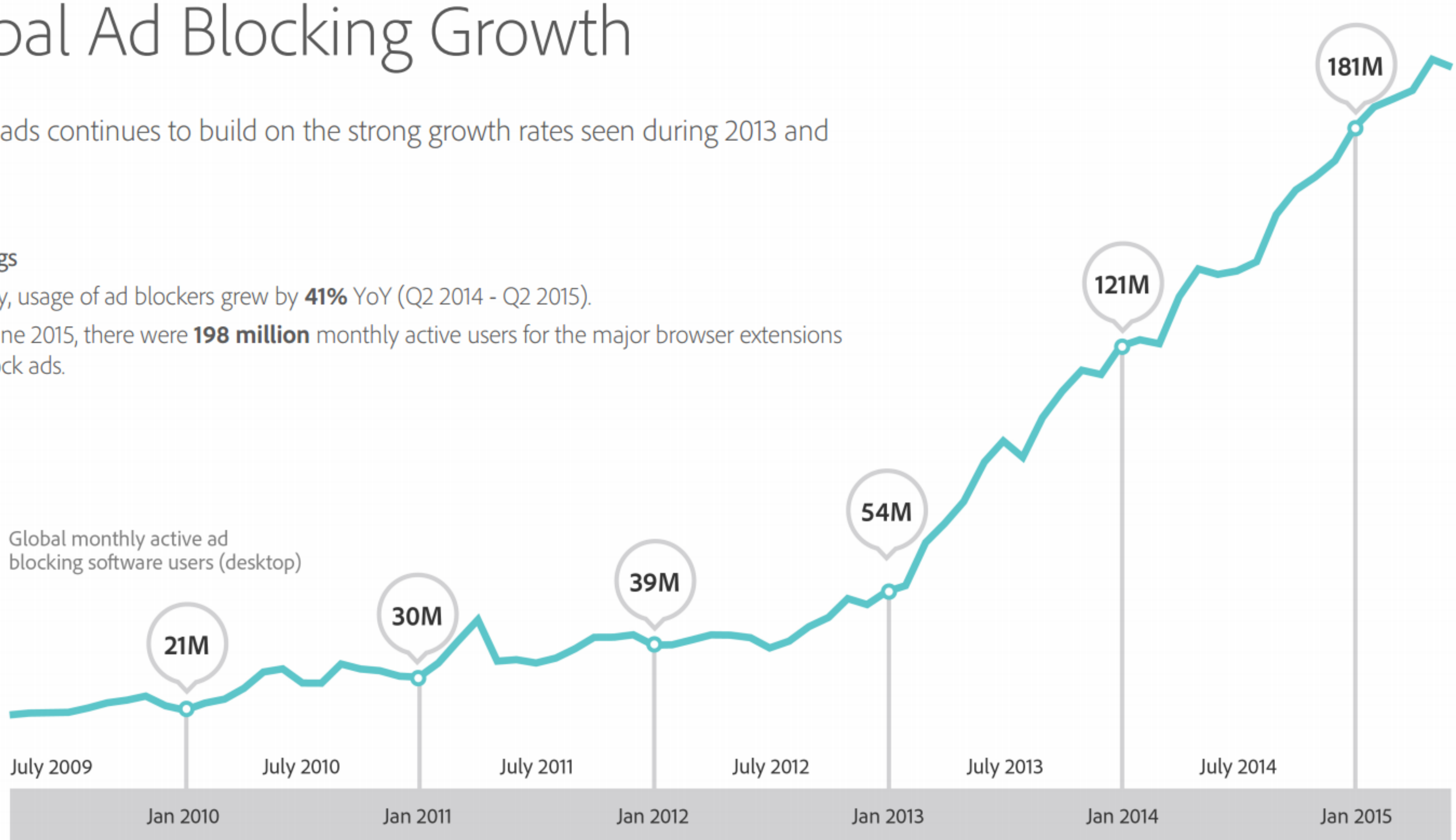
Problem Statement

Global Ad Blocking Growth

Blocking ads continues to build on the strong growth rates seen during 2013 and 2014.

The findings

- Globally, usage of ad blockers grew by **41%** YoY (Q2 2014 - Q2 2015).
- As of June 2015, there were **198 million** monthly active users for the major browser extensions that block ads.



PageFair Adobe

Problem Statement
The Mobile Landscape

Key Insights

At least 419 million people are blocking ads on smartphones
(this number excludes content blocking apps, in-app adblockers, and opt-in browser adblockers)

- There are twice as many mobile adblockers than desktop adblockers
- Mobile adblocking is most popular in emerging markets, such as China, India, Pakistan and Indonesia. 36% of smartphone users in Asia-Pac are blocking ads on the mobile web
- 22% of the world's 1.9 billion smartphone users are blocking ads on the mobile web.

Adblocking browsers are the dominant method of mobile adblocking

- In March 2016, 408 million people used an adblocking browser on their smartphones.
- Adblocking browser usage nearly doubled during 2015.
- Despite the hype, content blocking apps on iOS have had only 4.5 million downloads, making a limited contribution to adblocking usage globally. Mobile adblocking is less developed in North America and Europe

Mobile adblocking is less developed in North America and Europe

- In March 2016 there were 14 million monthly active users of adblocking browsers in Europe and North America. In total, 4.9 million content blocking and in-app adblocking apps were downloaded from app stores in Europe and North America since September 2014.

In-app ads can now be blocked

PAGEFAIR | 2016 Mobile Adblocking Report

Problem Statement
Effect on Yahoo's business

- Yahoo's worldwide net digital ad revenues will fall 13.9% this year to $2.83 billion, from $3.28 billion in 2015. That means its share of the overall digital ad market will fall to 1.5%, from 2.1% last year.

- Both search and display ad revenues for Yahoo will drop by double-digit percentages this year.
    - Display business will shrink 15.1% to $1.41 billion,
    - Search business will shrink 12.7% to $1.41 billion.

- *Reduced market share since Q3 2015*
    - **worldwide display ad business** down to 1.7%, from 2.0%.
    - **global search market** down to 1.6%, from 2.1%
    - **Mobile market** continue to shrink to 1.3% from 1.5%

Yahoo is the only search company expected to shrink in display and search revenue next year

EUGENE KIM | 0 | MAR 23, 2016, 10.25 PM

Facebook | LinkedIn | Twitter | Google+ | Reddit

Yahoo CEO Marissa Mayer

Here's some more bad news for Yahoo.

Yahoo's net search and display advertising revenues are expected to shrink this year, while the rest of the industry continues to grow.

According to market research firm eMarketer, Yahoo's net digital advertising revenues, which includes both search and display ad

Buzzing

13 hobbies highly successful people practice in their spare time

32 important details even dedicated fans missed during 'Game of Thrones' season 6

Are you reaping the full potential of your in ...

16 simple social skills that will make you more likable

ying a page from | 3 Apple worries that spy technology has been secretly added to the computer | 4 Why Amazon's most important cloud customer, Netflix, is speaking at Google's | 5 One stat shows how artificial intelligence is exploding into the world | 6 How to you ea

Net Search Ad Revenues Worldwide, by Company, 2014-2016
billions, % change and % of total

	2014	2015	2016
Google	$38.41	$43.98	$47.57
—% change	17.7%	14.5%	8.2%
—% of total	60.8%	58.9%	55.2%
Baidu	$5.35	$6.91	$8.71
—% change	41.0%	29.1%	26.0%
—% of total	8.5%	9.2%	10.1%
Microsoft	$1.90	$2.48	$2.94
—% change	11.9%	30.2%	18.6%
—% of total	3.0%	3.3%	3.4%
Yahoo	$1.78	$1.62	$1.41
—% change	4.8%	-9.2%	-12.7%
—% of total	2.8%	2.2%	1.6%
Sohu.com	$0.32	$0.47	$0.61
—% change	78.1%	47.0%	29.5%
—% of total	0.5%	0.6%	0.7%
Other	$15.41	$19.27	$25.01
—% change	19.3%	25.1%	29.8%
—% of total	24.4%	25.8%	29.0%
Total search spending	$63.17	$74.72	$86.25

Note: includes advertising that appears on desktop and laptop computers as well as mobile phones, tablets and other internet-connected devices; net ad revenues after company pays traffic acquisition costs (TAC) to partner sites; includes paid listings, contextual text links and paid inclusion
Source: company reports; eMarketer, March 2016

206327 www.eMarketer.com

Net Display Ad Revenues Worldwide, by Company, 2014-2016
billions, % change and % of total

	2014	2015	2016
Facebook	$11.49	$17.08	$22.37
—% change	64.5%	48.6%	31.0%
—% of total	21.0%	25.1%	26.9%
Google	$7.72	$9.07	$10.23
—% change	26.8%	17.5%	12.9%
—% of total	14.1%	13.3%	12.3%
Alibaba	$4.84	$6.50	$8.79
—% change	26.1%	34.1%	35.3%
—% of total	8.8%	9.5%	10.6%
Baidu	$1.51	$2.18	$2.90
—% change	94.2%	44.6%	33.1%
—% of total	2.8%	3.2%	3.5%
Twitter	$1.26	$1.99	$2.61
—% change	111.2%	58.8%	30.8%
—% of total	2.3%	2.9%	3.1%
Yahoo	$1.66	$1.67	$1.41
—% change	-4.3%	0.1%	-15.1%
—% of total	3.0%	2.4%	1.7%
Sohu.com	$0.48	$0.50	$0.55
—% change	25.0%	4.0%	9.5%
—% of total	0.9%	0.7%	0.7%
Other	$25.85	$29.18	$34.35
—% change	10.7%	12.9%	17.7%
—% of total	47.2%	42.8%	41.3%
Total display spending	$54.81	$68.17	$83.22

Note: includes advertising that appears on desktop and laptop computers as well as mobile phones, tablets and other internet-connected devices; net ad revenues after company pays traffic acquisition costs (TAC) to partner sites; includes banners (static display), rich media, sponsorships and video (including advertising that appears before, during or after digital video content in a video player)
Source: company reports; eMarketer, March 2016

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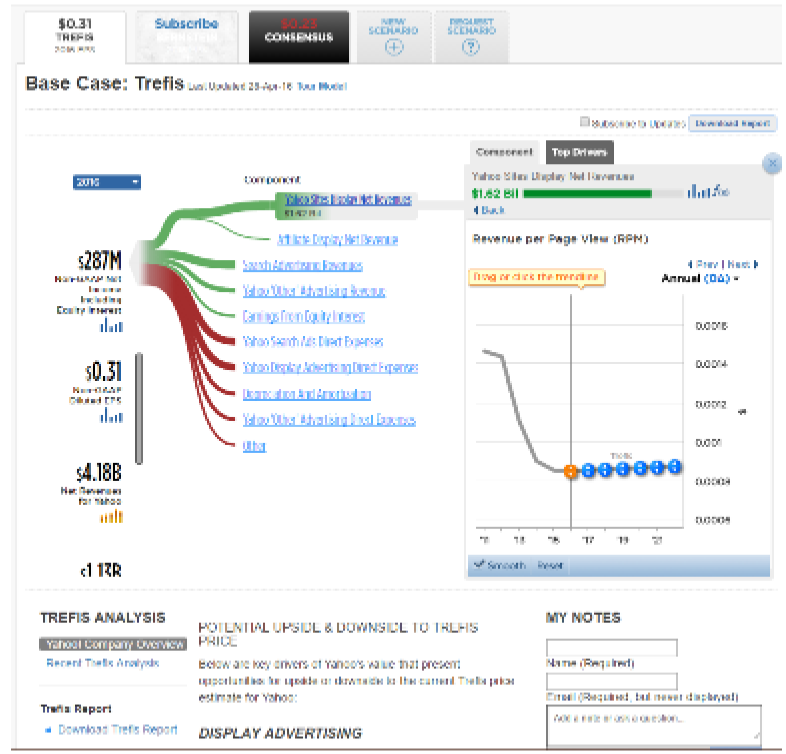
Problem Statement

Effect on Yahoo's business



[Revenue per page view from Display Ads](https://www.trefis.com):

- Yahoo's RPM rate to remain at around $0.872 per 1,000 page view
- RPM will remain flat as Yahoo continues to push for mobile platform, which generally brings in lower dollar ad revenues
- If Yahoo consistently loses ground to other online advertising sites such as Google and Facebook, and its RPM declines to $0.50 by the end of the Trefis forecast period, there could be a 2% downside to Trefis price

https://www.trefis.com

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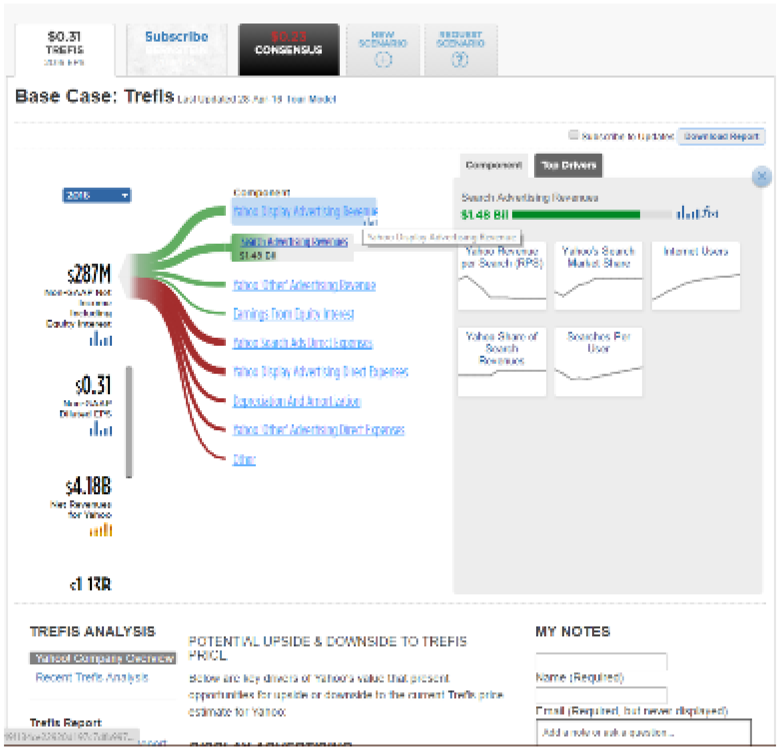
Effect on Yahoo's business



[Yahoo's Search Market Share]:
- Yahoo's global search market share has consistently declined from around 6.48% in 2010 to around 5.37% in 2012.
- However, it grew to 6.47% by 2014, largely due to search partnership with Microsoft.
- It improved further to 6.6% in 2015.
- Expected to increase marginally going forward as Yahoo improves its content.
- In 2015, Yahoo signed a three year deal with Google to show Google's search results on Yahoo's web page.

https://www.trefis.com

[Revenue per Search]:
- Yahoo's RPS to decline from an estimated $7.8 per 1,000 searches in 2015 to around $7.6 per 1,000 searches
- Google's RPS has always been higher than Yahoo.

https://www.trefis.com

Problem Statement

Implications

Customers

- Dilution of ad-based revenues will hamper new customer acquisition
- End user value-add through targeted, safe ads will be minimal – leading to fewer eyeballs on Yahoo internet properties

Business

- Continued dilution of revenues through fewer end user base for search, and reduced client base for ads
- Unsustainable business model due to declines in revenue
- Devaluation of stock – company vulnerable to acquisition / takeover

Social

- Reduced available content choices, as many publishers will be forced out of the business
- Increased user costs as websites will be forced to charge for content – creation of "Walled Properties"
- Will force the industry to push for regulation, placing the future of the web in the hands of legislators

Internal Organization

- Plans already in place for 2016 to reduce workforce by 15%
- Reduced Global presence – closing down 5 international locations
- Write-down of asset value – including Tumblr

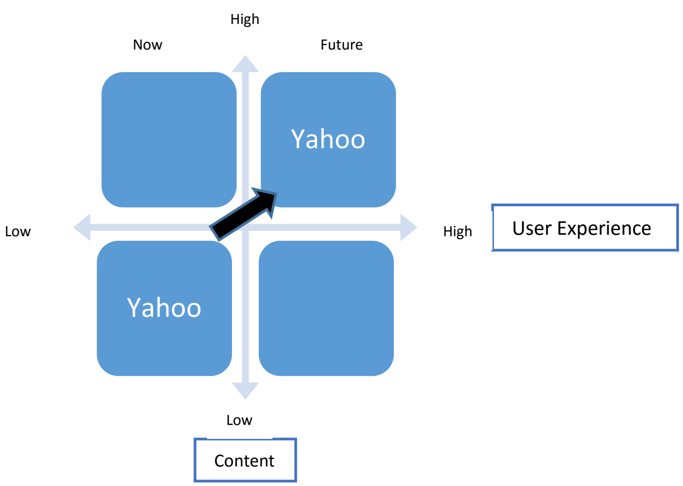
Strategy

Strategy

2016 Business Performance Highlights

- Yahoo report improvement in performance in the Mobile, Video, Native and Social (MVNS, or more commonly MaVeNS) vertical during the quarter with GAAP MVNS revenues (including TAC) grew by 26% to $472 million.
- Non-Maven revenues were flat at $750 million
- Additionally, mobile revenue grew by 15% to $291 million, while PC ads revenue improved by 6.7% to $931 million.

Current Reality: The Market Map
Where does Yahoo need to be & where it is now



Internet advertising

What works…	… and what doesn't
• User-specific, targeted & relevant ads • Safe, secure and unobtrusive ads • Native ad strategy • Whitelist ads with ad-block tech cos.	• Blocking users • 3rd party rerouting

Yahoo's three-pronged strategy

Renewal

Effective use of Analytics
- Customer analytics capture end-user internet usage preferences
- Push only highly relevant and focused ads
- Collaborate with content providers to enhance quality of content

Visionary

Spearhead Advocacy group
- Advocate high quality and safe ads
- Non-invasive, protecting end user privacy
- Guidelines on ad standards that can be whitelisted with ad-blocking tech cos.

Adaptive

Collaborate
- Offer choice to end user – visit Yahoo pages with ads, or pay a fee to install ad-blocker
- Revenue sharing – a percentage of ad revenue to be shared with the ad blocking tech cos.

Effects and Measurement

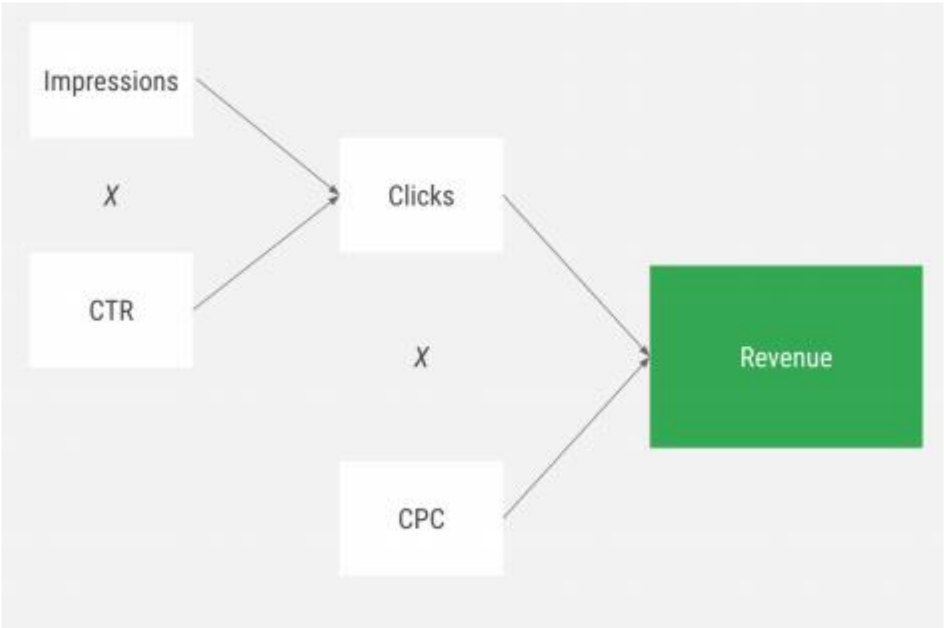
Effects and Measurement

Describe the anticipated effects of your strategy and how you will measure them

Measuring impact of Effective Use of Analytics

Establishing a baseline

Revenue (Y) = f(units sold (X1) x price per unit (X2)) => Clicks x Cost per Click (CPC)
Clicks = Impressions x Click-throught-rate (CTR)



- In web advertising, the unit of revenue is arrived at by calculating the units sold (clicks on the display ad) x the price per unit, which is the cost per click (CPC). Further, clicks can be further categorized into Impressions and click-through rates

Effects and Measurement

Describe the anticipated effects of your strategy and how you will measure them

Measuring impact of Effective Use of Analytics

- Establishing a baseline
- Forecasting demand and revenue for multiple scenarios

Figure 1

	Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Impressions	1000	991	976	940	866	750	634	560	524	509	503
	CTR	1.00%	1.01%	1.02%	1.05%	1.12%	1.27%	1.50%	1.73%	1.88%	1.95%	1.98%
Realistic	*Clicks*	10	10	10	10	10	10	10	10	10	10	10
	CPC	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
	Revenue	$100	$100	$99	$98	$97	$95	$95	$97	$98	$99	$100
	Impressions	1000	991	976	940	866	750	634	560	524	509	503
	CTR	1.00%	1.01%	1.04%	1.09%	1.24%	1.54%	2.00%	2.46%	2.76%	2.91%	2.96%
Optimistic	*Clicks*	10	10	10	10	11	12	13	14	14	15	15
	CPC	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
	Revenue	$100	$100	$101	$103	$107	$115	$127	$138	$145	$148	$149
	Impressions	1000	991	976	940	866	750	634	560	524	509	503
	CTR	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
Pessimistic	*Clicks*	10	10	10	9	9	8	6	6	5	5	5
	CPC	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
	Revenue	$100	$99	$98	$94	$87	$75	$63	$56	$52	$51	$50

- Scenario 1: Pessimistic – Yahoo takes no action; CTR stays constant, while impressions follow a negative trend
- Scenario 2: Optimistic - CTR improves exponentially until levelling off at 3X the original CTR
- Scenario 3: Realistic - CTR improves at a slightly positive rate – half of optimistic scenario

Key assumptions & disclaimer

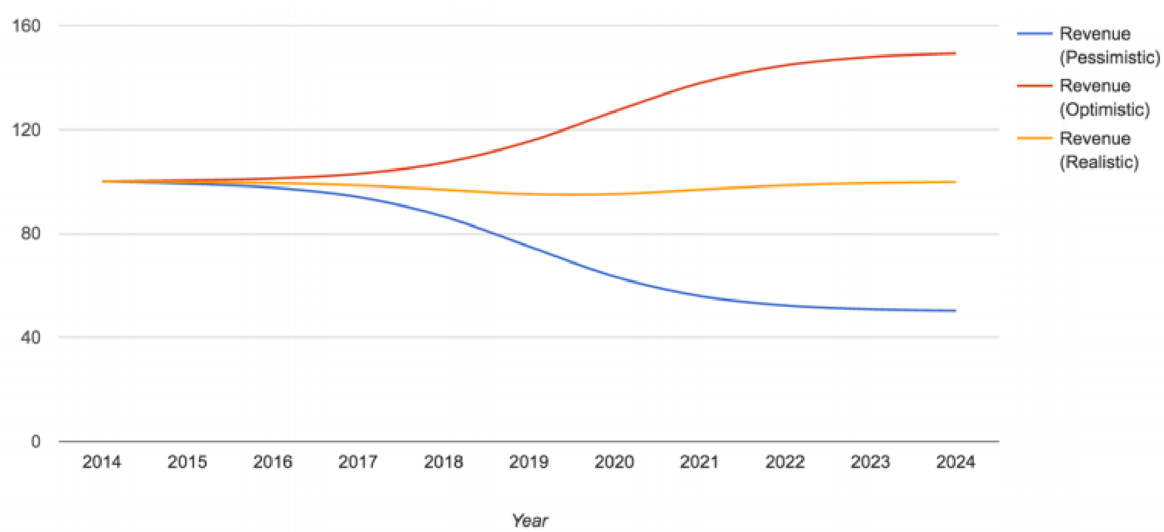
- Revenue baseline – 2014 at index 100
- Ad-blocking will reduce total impressions by 50% for the 10-year forecast period
- Assumptive data shown for illustrative purposes. Actual weekly data from Yahoo is recommended
- Actual data will allow adjustments for seasonality trends

Effects and Measurement

Describe the anticipated effects of your strategy and how you will measure them

Measuring impact of Effective Use of Analytics

Revenue estimation for three scenarios



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- Scenario 2: Optimistic - CTR improves exponentially until levelling off at 3X the original CTR
- Scenario 3: Realistic - CTR improves at a slightly positive rate – half of optimistic scenario

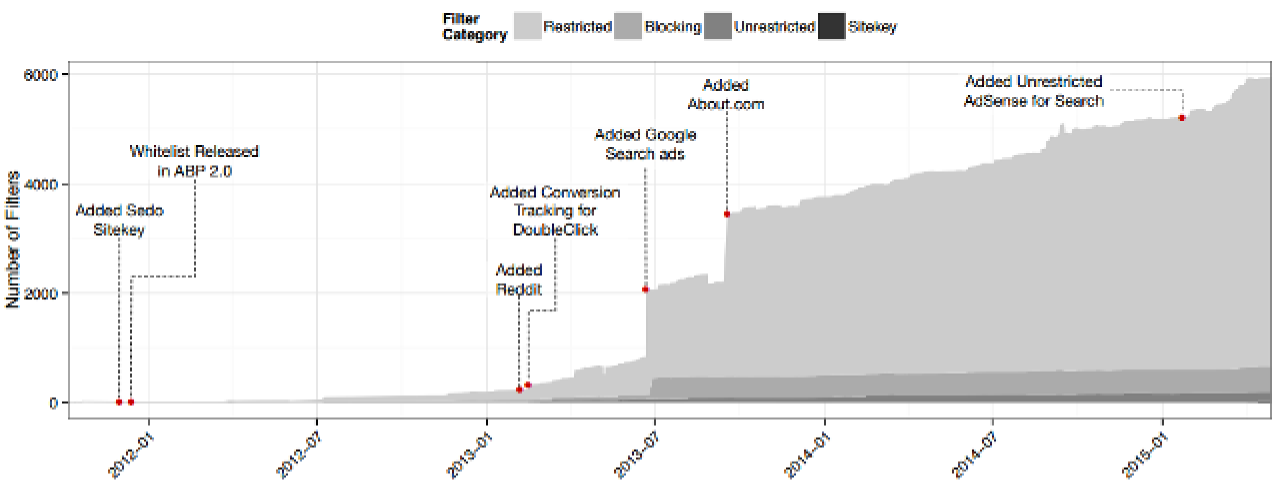
- Realistic scenario estimate shows the revenues to be declining till 2020, when ad blocking adoption begins to stagnate and CTR improvements begin to kick-in

Effects and Measurement

Describe the anticipated effects of your strategy and how you will measure them

Measuring impact of Whitelisting ads

The growth of the Acceptable Ads whitelist: The whitelist has grown steadily since its introduction in 2011



Source: Dept. of Computer Science and Engineering, Penn State University

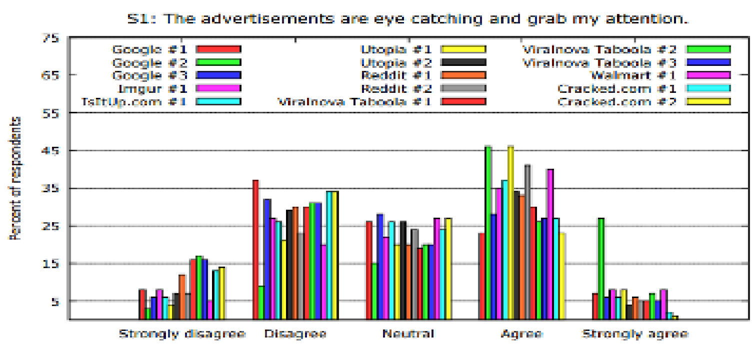
Effects and Measurement

Describe the anticipated effects of your strategy and how you will measure them

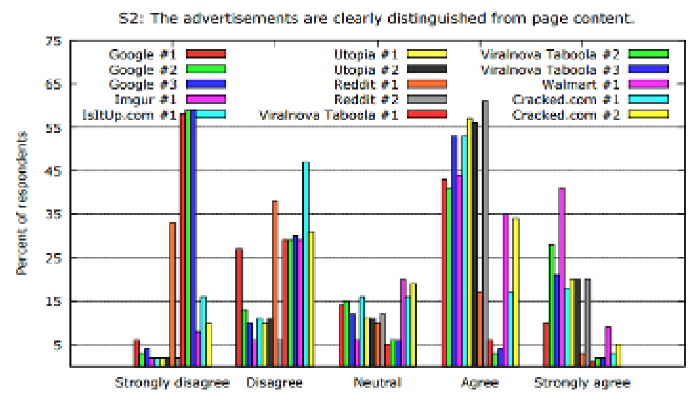
Measuring impact of End-user perceptions

- Underlying the acceptable ads program is the goal that both publishers and users find the whitelisted ads to be acceptable
- 305 users surveyed on the following parameters –

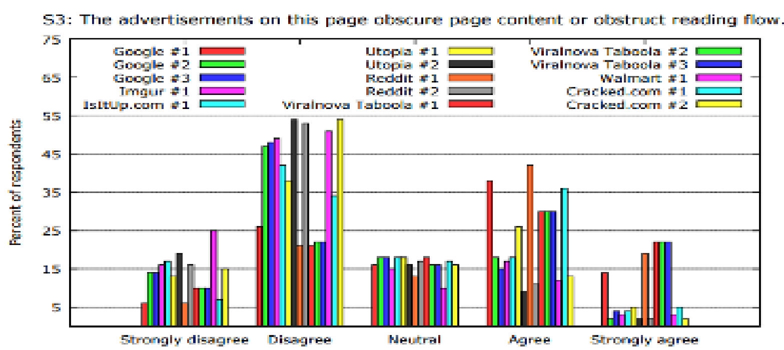
1. The advertisements are eye-catching and grab my attention
2. The advertisements are clearly distinguished from page content
3. The ads on this page obscure page content and/or reading flow



(a) Attention grabbing advertisements



(b) Advertisement distinguished from content



(c) Advertisement obscuring content

Summary:

- There is a broad dissension among participants about what was acceptable, confusing or inhibiting.
- Each user views ads differently
- Single whitelisting policy can be counter-productive as the user community is diverse
- Deep customer analytics needs to be undertaken on user preferences based on demographics and psychographics

Source: Dept. of Computer Science and Engineering, Penn State University

Effects and Measurement

Describe the anticipated effects of your strategy and how you will measure them

Anticipated Effects of recommended strategy and it's measurement

Business

- Consistent Impressions and improved CTRs
- Higher % of non-native ads
- Higher yield and ROI

Social

- High quality content leading to higher user stickiness
- Increased acceptance of non-invasive ads
- Risk of regulation is low

Internal Org

- Increased penetration in global markets
- Higher employee sat and retention

Some KPIs that ties in with the recommended strategy
Revenue
ROAS – Return on ad spend
First time visits
Returning visits
Dwell time
CPC & CTR
Impressions
Goal conversion rates