

**The State of Digital Marketing - Technology and Business Landscape**

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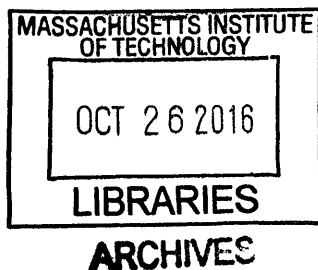
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## ABSTRACT

Digital marketing has grown rapidly over the last two decades into a multi-billion dollar industry with thousands of companies operating in the space. Its' digital advertisement model has provided crucial economic backbone to support the proliferation of free digital content around the world. However, the industry is now facing significant challenges and controversy around Ad Blocking. The rapidly rising adoption of Ad Blocking is threatening the fundamentals in the digital advertisement model, and could have a profound impact on digital marketing and Internet content consumption.

In this thesis, we research online resources to describe the latest technology and business landscape for the digital marketing industry, including the main digital marketing platforms, and system decomposition for its key subsystem Ad Tech industry. We then introduce the Ad Blocking controversy. We use stakeholder value network analysis to analyze how various market responses to Ad Blocking satisfy the system stakeholder values, hoping to shed lights on possible directions for solving the challenge systematically.

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To my parents, family and friends, I hope I am able to return more back to the world to make you all proud.

## Glossary of Acronyms

SMS	Short Message Service (mobile text message )
CRM	Customer Relationship Management
CAGR	Compound Annual Growth Rate
CPC	Cost Per Click
CPM	Cost Per Thousands Impressions
CPA	Cost Per User Acquisition
SEM	Search Engine Marketing
SEO	Search Engine Optimization
DMP	Data Management Platform
DSP	Demand Side Platform
SSP	Supply Side Platform
SVN analysis	Stakeholder Value Network analysis

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## Chapter 1. Introduction

### 1.1 Motivation

Digital marketing is an exciting and important industry. It is also a complex business, technology and social system.

Digital marketing is ubiquitous in our daily life, whether we are browsing internet, watching videos, or socializing with our friends on mobile devices. There are negativity about it as the Ad Blocking problem shows us, but the system provides a very important economic foundation for the proliferation of free digital content in the world, which is crucial to digital democracy and equal access to information.

The most venerable Internet companies today, such as Google and Facebook, have large part of their businesses to do with digital marketing. The digital advertisement model is also a top choice business model for numerous young technology startup companies as they follow the steps of these successful technology giants. It can be said that digital marketing has been an important factor that fueled the invention of the many convenient digital technology we enjoy today.

It is a huge industry with annual revenues close to hundreds of billions of dollars, yet still growing at double digit growths annually. It is also a complex business and technology system, with thousands of companies making up the Ad Tech or Ad Marketer subsystem, where business and technology innovations fuel the growth of the industry and keep pushing the envelope of the digital marketing system.

With these huge successes, there also come challenges. Ad Blocking is the latest and most serious challenge to the digital marketing system to date. User adoption of ad blocking has grown even faster than the digital marketing industry itself, costing the industry billions of dollars annually from losing advertisement revenues. It breaks the system's fundamental model of exchanging ads viewing for free content. It has become a serious challenge that digital marketing system must solve to continue thriving.

The motivation is to learn and explain this important system, to explain and raise awareness of the ad blocking problem, hoping to help identifying solutions to advance the system.

## 1.2 Objectives

The objective is to learn and understand the digital marketing system from both businesses and technology perspective at a high level. The Ad Blocking problem is very new and current, injecting chaos and challenges to the digital marketing system which does not have any effective solution yet. We hope to help the readers understand what it is, how it gets started, and what responses exist in the market today. By understanding the problem at its root and in the system context within the digital marketing, we hope it helps the readers assess solutions that can solve the problem systematically.

## 1.3 Approach and Methodology

We did not find many literatures that address the digital marketing system systematically and explain the internals of the system. We speculate that may be because the system and industry are so large and grow so fast. Professionals in the industry are occupied with racing to solve customer needs or working on the next business and technology innovations.

Instead, we found many discrete resources from online blogging, slide shares and industry reports, which explain individual aspects of the system. The thesis attempts to summarize these resources to present a more complete picture of the system.

We believe the Ad Blocking problem exposes unsatisfied stakeholder needs from users. We apply the Stakeholder Value Network (SVN) analysis to the system to understand how the problem started and evaluate different options for solving the problem.

## 1.4 Thesis Organization

Chapter 2 provides an overview of the digital marketing industry, including a definition, history of the industry, and several important characteristics of digital marketing.

Chapter 3 zooms in on the major digital marketing platforms to provide more details on the state and practices of digital marketing.

Chapter 4 attempts to decompose the digital marketing system and the Ad Marketer subsystem to describe the internal system components, functions and their interactions.

Readers familiar with the digital marketing industry and system components can jump directly to Chapter 5, where we start discussing Ad Blocking. Chapter 5 provides an overview of Ad Blocking. It describes the history and current state of Ad Blocking, how it works, its controversy, and market responses around Ad Blocking.

Chapter 6 applies Stakeholder Value Network analysis to the digital marketing system and Ad Blocking issue. It analyzes how ignorance of users' needs on ads has led to Ad Blocking, and evaluates the current responses to the problem.

Chapter 7 concludes the thesis with a summary of the digital marketing system and Ad Blocking challenge. It summarizes the findings from our SVN analysis, and provides suggestions on future work.

## Chapter 2. Overview of Digital Marketing

In this chapter, we will provide a basic overview of digital marketing. We start with a definition of digital marketing and a review of its history. We then list several important characteristics of digital marketing to discuss how it compares to traditional marketing.

### 2.1 What is digital marketing?

Digital marketing is a broad term that describes a set of marketing processes that utilize all available digital channels to promote a product or service or build a digital brand<sup>1</sup>. The key objective of digital marketing is to promote brands through various forms of digital media<sup>2</sup>.

Although digital marketing uses any channel with a digital foundation, including off line channels such as billboards, the most important subset of digital marketing is internet marketing or online marketing. In this thesis, we will focus our discussion on online marketing, and we use the term online marketing, internet marketing and digital marketing equivalently in this thesis.

The current major digital channels for Internet marketing include: web sites display, search engine marketing, social media marketing, mobile display and in-app marketing, video marketing, and email marketing. As technology continues to advance in the digital age, new channels will arise to present more opportunities for digital marketing expansion.

### 2.2 The history of digital marketing<sup>3,4,5,6</sup>

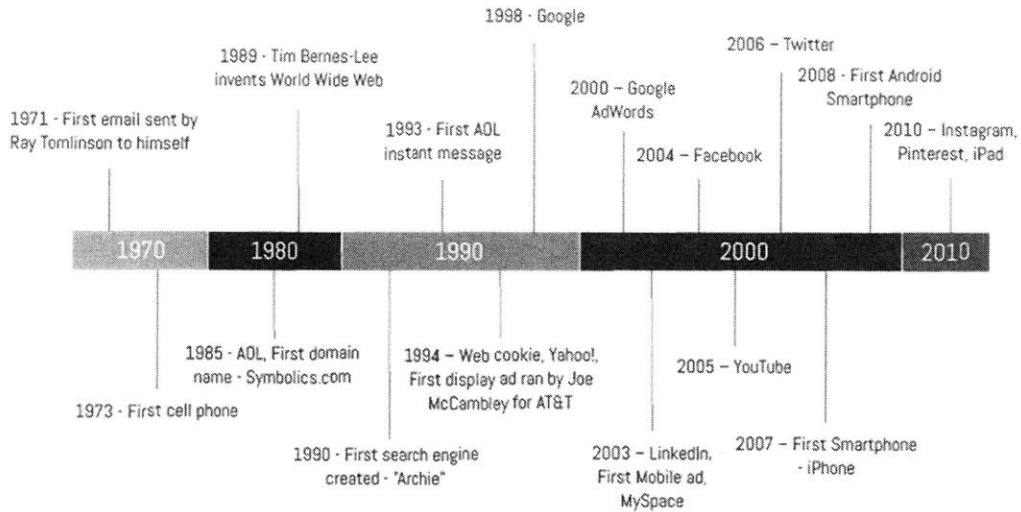
The history of internet marketing reflects the evolution of digital age as we know it. Marketers have always been looking out for opportunities to improve the automation, efficiency and



reach of their marketing messages. The early days of digital marketing saw the use of SMS, email, instant message, customer database and CRM software.

The Web 1.0 Internet boom in the 1990s took the digital marketing potential to a great new level. The world was thrilled by the promise held by the information age, and marketers were among the enthusiasts. On October 25th 1994, the website HotWired hosted the world's first banner advert. On the hay days, the .Net bubble was fueled by the various glaring eye balling statistics instead of financial metrics.

After the .Net bubble crash, the Internet industry and digital marketing were set back. But soon we witnessed the birth of Web 2.0 companies that not only leaped the Internet technology forward but most importantly also found ways to connect the Internet to people and businesses in the real world. The last decade is filled with exciting technology products and services built from companies such as Google, Facebook, LinkedIn and Youtube, who introduced great digital services for searching information, social, video entertainment and more. The successes of Apple's iPhones and Android smartphones have taken the world to mobile computing and on-the-go information consumption become mainstream.



*mediaocean*

Figure 1 Digital marketing evolved with digital age<sup>4</sup>

The invention of the new digital channels has fueled excitement, innovation and vast business opportunities in the marketing world. Businesses found themselves facing a huge digital revolution, and they have to adapt and embrace it to stay relevant. As the need for effective marketing in digital channels grow, the digital marketing industry has seen tremendous growth over the last decade.

Annual Revenue 2005-2014 (\$ billions)

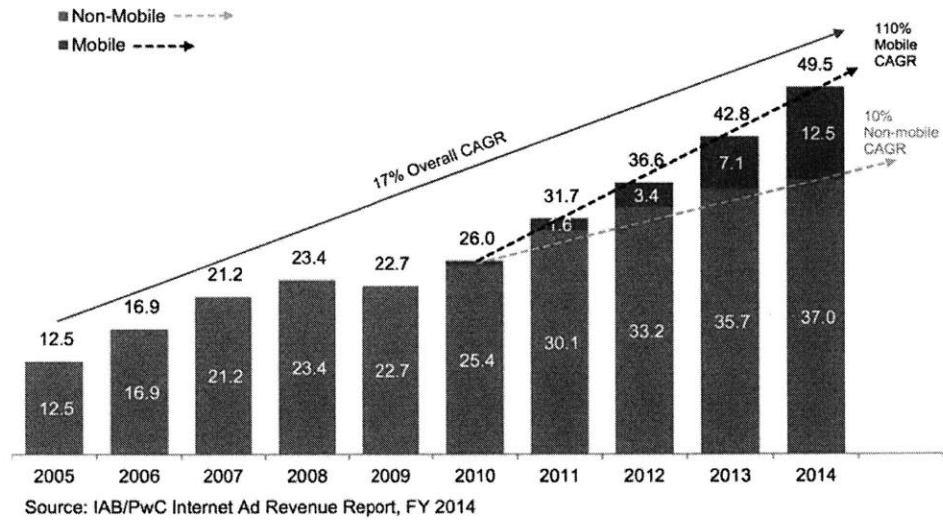


Figure 2 IAB/PwC Internet ad revenue growth 2005-2014<sup>7</sup>

With this exponential growth, the digital marketing industry has turned into a vastly complex system, with thousands of players providing all kinds of advertising services. Figure 1.3 is the latest Marketing Technology Landscape Supergraphic from ChiefMartec.com, which tallies 1,876 vendors represented across 43 categories in the digital marketing industry. In Chapter 4, we will decompose the digital marketing system to various stakeholders and explain the services they provide.

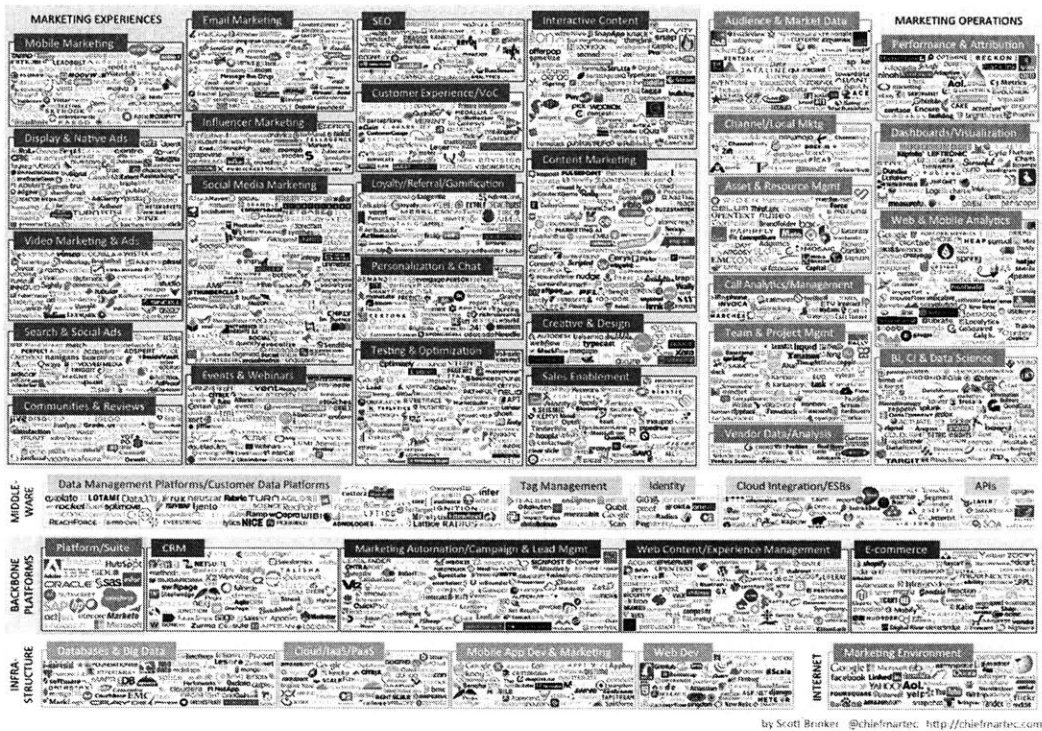


Figure 3 Chiefmartec.com 2015 Marketing Technology Landscape Supergraphic<sup>8</sup>

## 2.3 Characteristics of Digital Marketing

Compared to traditional marketing through media such as TV and newspaper ads, digital marketing has many advantages, some of which are:

**Personalization for user targeting.** Digital content is consumed on demand by individual users.

Leveraging user data and demographic information, digital marketing technologies allow personalized ads to be delivered to target users at the right time.

**Measurable results and agility.** Marketing technologies allow advertisers to track the views, clicks and more, even real time, to measure the effectiveness of their ad campaigns. Digital ad

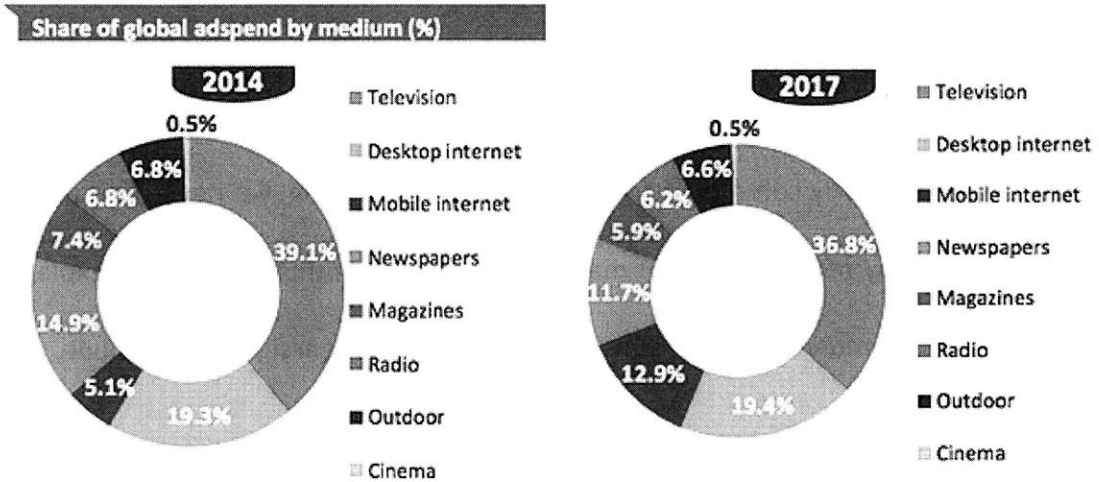
content can also be changed at any time. The ability to measure ads effect and change ads campaigns real time give digital marketing great agile advantage over traditional marketing.

**Accessibility, reach and longevity.** Internet ads have a far larger reach than traditional ads that circulate physically or in closed TV network. Internet ads can reach endless users worldwide who visit the digital content from their digital devices. Digital marketing can also have a long lasting effect. Companies' website or marketing videos can stay for a very long time, keep getting discovered by new visitors.

**Better user interaction.** Compared to the traditional one-way broadcasting type of marketing, Internet marketing is usually two way communication and allows user interaction. Users can often provide feedback to the ads interactively by clicking, skipping or closing ads, even providing feedback on why they don't like the ad. Internet marketing is also an inbound or pull marketing type whereas traditional marketing is outbound or push marketing type. In internet marketing, users often seek out the information by searching or visiting interesting blog contents etc.

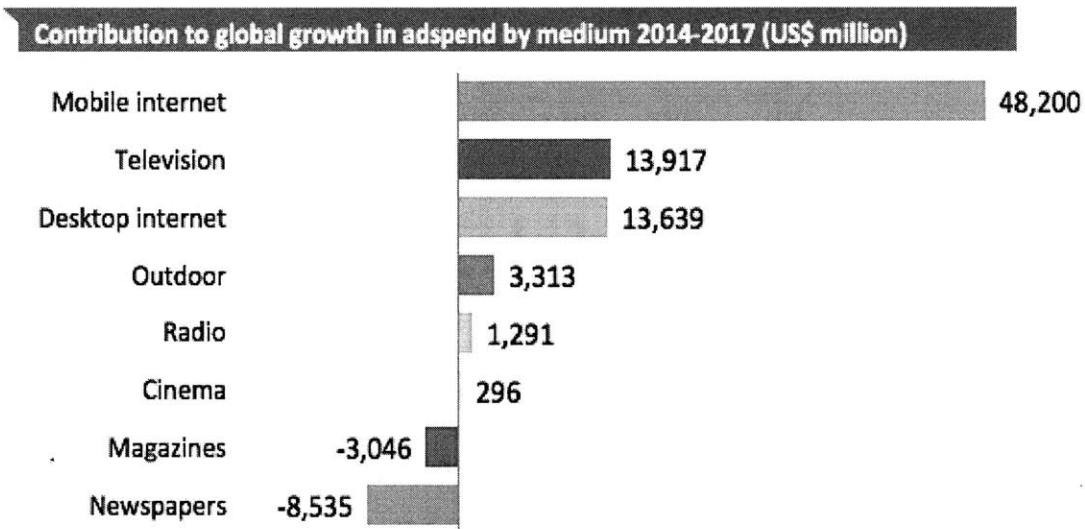
**Cost.** Internet marketing are much cheaper than traditional print and TV ads. Advertisers can also manage ads campaign costs much more closely such as setting daily campaign budget.

Although traditional advertising still has the largest share of total marketing spend, digital advertising is on the rise to gain more traction given the many advantages it gives to advertisers. In particular, mobile internet is expected to increase the most while traditional marketing spent on newspapers and magazines is set to decline, per research from ZenithOptimedia<sup>9</sup>.



Source: ZenithOptimedia

Figure 4 Share of global ad spend by medium (ZenithOptimedia)<sup>9</sup>



Source: ZenithOptimedia

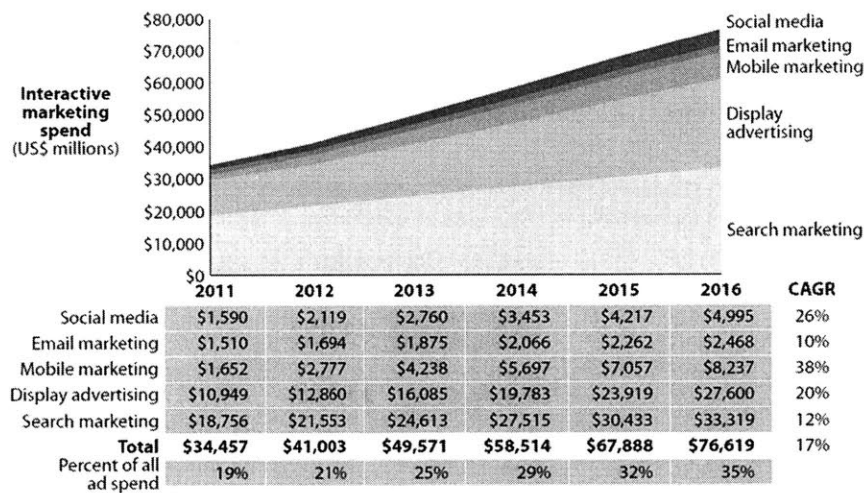
Figure 5 Contribution to global growth in ad spend by medium 2014-2017 (ZenithOptimedia)<sup>9</sup>

## Chapter 3. Digital Marketing Platforms

It is important to understand the various marketing channels when discussing digital marketing.

These channels share many common attributes of digital marketing, yet have their unique characteristics and may require different marketing strategy. In this chapter, we explain the most important digital marketing platforms, including Display, Search, Social, Mobile, and Video marketing.

**Figure 1** Forecast: US Interactive Marketing Spend, 2011 To 2016



Source: Forrester Research Interactive Marketing Forecasts, 2011 To 2016 (US)

59379

Source: Forrester Research, Inc.

**Figure 6** Forecast: US Interactive Marketing Spend 2011 to 2016

As the figure shows, search and display marketing have most of the digital marketing spend, but mobile and social marketing are growing the fastest. From 2011 to 2016, total CAGR of all digital marketing platforms is estimated at 17%, while the estimated CAGR is 26% for social marketing and 38% for mobile marketing.

Below, we will briefly introduce each channel, highlighting its key characteristics and important considerations for marketers. Note that there is a great deal of overlap among the channels. For example, users spend a lot of time on mobile devices social networking and searching. Also, a good percentage of display, social media and mobile ads are delivered in video format. Successful digital marketing practices integrate the various channels together to form a holistic marketing strategy. Below we briefly explain some of the basics and point out important marketing considerations for each channel, but it is not meant to be conclusive at all.

### 3.1 Display Marketing<sup>10</sup>

Display marketing is the oldest form of digital advertising started in the early Internet days. They are ubiquitous now on websites, in the form of banner ads (image/text) and rich media ads etc. (forms, polls, and video etc.).





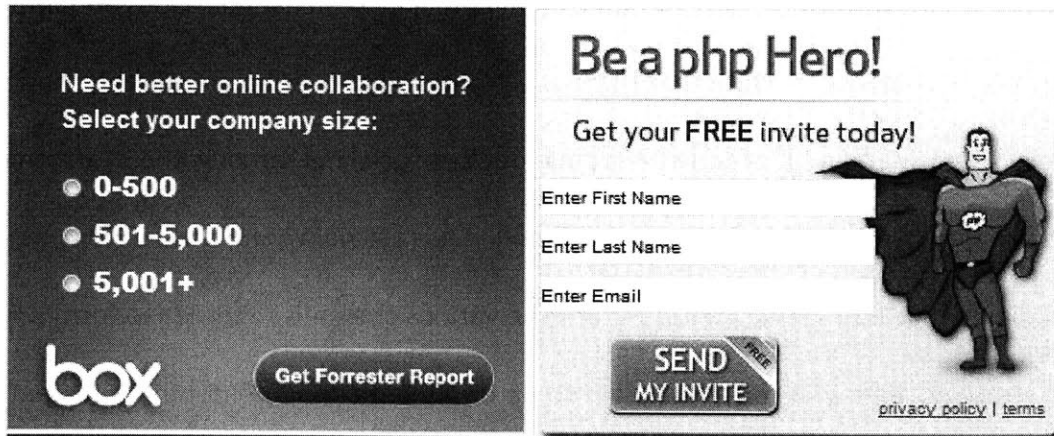


Figure 7 Examples of Display Ad

As online information exploded, the world flocks to internet for news, knowledge discovery, information consumption and entertainment. Content publishers and marketers soon realized the potential of adverts display in websites, better and cheaper than adverts display in print media and TV in many ways.

In addition to advertiser and publisher, the other major stakeholder in display advertising is media agency. Media agency facilitates the buying and selling of ads, including designing the ad (creative), buying ad placements (media buying), managing the ad campaign by budgeting and tracking etc.

Available ad space on publishers' websites is called ad inventory. Ad inventory can be bought in several different ways:

1. Impressions. Advertiser pays for the viewing or showing of the ad. CPM is cost per 1000 impressions of the ad.
2. Clicks or Click-through. Advertiser pays for the number of click its ad received. CPC is cost per click.

3. Leads. Advertiser tracks user conversion and pays for the number of user acquired or user lead. CPL is cost per lead, and CPA is cost per user acquisition.

As the buying model changes from impression to clicks to leads, the economic risk shifts from advertisers to publishers. The cost rises in this direction to compensate for the increased risk for publishers.

Given the many advantage digital marketing has over traditional marketing, we have seen the size of digital marketing industry revenue continue rising at an impressive double digit CAGR over the decade. This exponential growth has attracted giant technology companies and startups alike to innovate in this space. As a result, the ad buying and selling market has become very sophisticated and complex, in which thousands of companies providing competing or complimentary services. The innovation has brought immense benefits to advertisers and publishers, and vastly optimized the efficiency of ads buying and selling.

Ads can be bought at different price levels, including for example direct buying of prime ad space for target audience or volume of suboptimal ad space through real time bidding.

Advertiser can specify detailed requirements for ads such as the duration of ad showing, the percentage of ad above the fold (displayed in the better part of the page), the time of day etc.

Various tracking technology allows advertiser to obtain vast amount of information about visitors including type of audience, demographic, and browsing history etc. Advertiser can differentiate visitors between new prospecting and retargeting to serve ads differently. In plain English, retargeting happens when users are followed by ads related with websites they have visited in the past. It is a popular technique for advertiser, which found wonders in the ability

to track users, but very annoying for users. Ad techniques such as retargeting has triggered user push back and led to adoption of ad blocking technology. We will analyze the ad blocking issue in more detail in Chapter 5.

An important organization for display advertising is Interactive Advertising Bureau (IAB). It standardizes certain aspects of display ads, such as ad sizes and ad behavior. In Chapter 5, when we discuss ad blocking phenomena, we will discuss IAB's initiatives in rallying the industry for standards on more user friendly ad engagement with users.

### 3.2 Search Marketing<sup>11</sup>

Search marketing has a long history rooted in Google's tremendous success with its search technology and AdWords system. The importance of search marketing can be seen in the volume of search occurring every day. In April 2015, there were more than 18 billion search engine queries in the U.S alone.

As a Google search example shows below, search results normally have two sections: one section contains the organic search result, and the other contains paid advertisement.



Figure 8 Example of Google search results

Matching to these two sections in the search result, search marketing has two major areas:

1. **SEO (Search Engine Optimization)**. SEO focuses on improving the ranking of a business's website in the organic search results. There are no fixed formulas for a website to stand out from the crowd in search results. Instead, the fundamental goal of search engines is to deliver best matches to users searches. Various SEO techniques exist to help a business website improve its scoring against this goal, such as allowing the site to be found and indexed by search engines more easily, expanding or focusing on search terms it want to target so as to differentiate from competitions, and delivering more valuable content that matches to the target search terms etc.
2. **SEM (Search Engine Marketing)**. Within the term of search marketing, search engine marketing specifically refers to managing ad campaign for paid search advertising. Paid

search advertising allows a business to show in front of users as advertisers regardless how it ranks in the organic search result, therefore presenting a great opportunity for small businesses or new startups to jump start their brand awareness. Paid search advertising can also be cost efficient, since costs are only incurred through PPC (pay-per-click). Same as display advertising, ad campaigns can be managed with many specifications such as daily budgets.

In addition, there is a type of ads called PLA (Product Listing Ads). PLA are displayed in the advertising area when search engines determine the search is for specific products. See below example for a Google search for men's shoes:

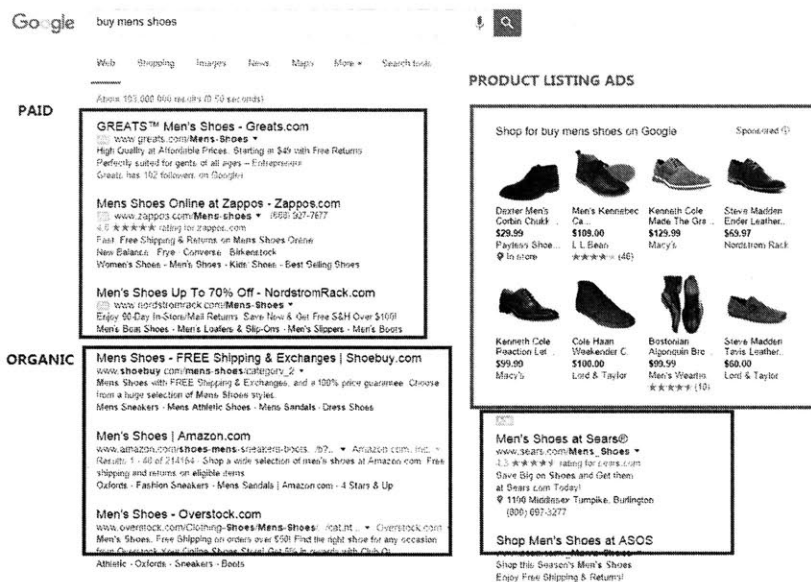


Figure 9 Product Listing Ads in a Google search result for product searches

As of May 2015, the search engine market in the U.S is dominated by Google with a 64.4% share, with Bing and Yahoo occupying 20.10% and 12.7% of the market respectively.

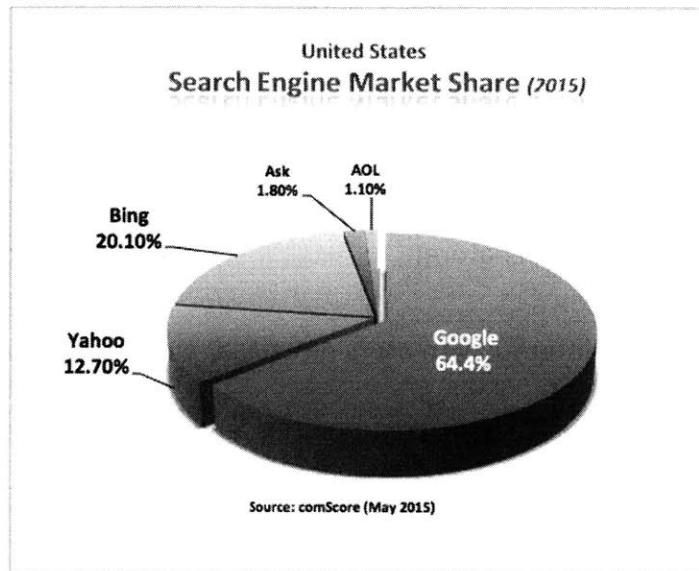


Figure 10 U. S Search Engine Market Share 2015

Search marketing shares the many same advantages as other form of digital marketing. For example, SEM campaigns can be monitored and tracked very closely, providing detailed statistics for businesses to track the performance of the ad campaign. But search marketing also has a unique attribute – search traffic is completely user opt-in traffic. Whether businesses get displayed highly in the organic search result through SEO, or in the advertising section through PPC, the opportunity of getting in front of users when they are searching for relevant information is very valuable. Successful search marketing practices can cost effectively increase brand awareness and generate user leads for sales conversions.

### 3.3 Social Marketing<sup>12</sup>

Online social media has become a major online destination for internet users. Global daily active social media users have reached 2.2billion (30% of world population) in 2015 per Wearesocial.net’s Global Digital Statshot<sup>13</sup>. Users spend several hours every day in social media

sharing their life stories, views on news events, hobbies, and interests etc. with excitement and sometime even obsessions.

There are many uniquely attractive marketing opportunities in social media marketing stemming from its social interaction nature:

- Allowing businesses to interact with users directly at almost zero cost.
- Providing a space for users to build communities, and to share their feedback on products and services etc.
- Businesses can monitor user sentiment, provide customer services to complaints, nurture customer relationship, and develop customer advocates through social media marketing;

Given the excellent user engagement opportunity, it is no surprising that social media marketing has seen tremendous growth from businesses. As showed in figure 6, social media marketing has experienced a 26% CAGR compared to the overall digital marketing growth of 17% CAGR from year 2011 to 2016.

It can also be very challenging for businesses to manage their social marketing efforts. There are already many hugely popular social networking sites existing, such as Facebook, Twitter, LinkedIn, Pinterest, Google +, Snapchat, Instagram, WeChat, Quora, and Reddit etc, and yet new social media sites keep coming up. Which social networks should a business focus on? Once it gets on a platform, how should a business handle the potentially large amount of user interaction data coming in every day? Each of these topics warrants a very lengthy discussion. In this overview we only point out the vast opportunity and challenges for instant, direct

customer interaction through social media marketing, which requires businesses to systematically plan and manage their marketing campaign in this exciting channel.

### 3.4 Mobile Marketing<sup>14</sup>

As showed in figure 6, mobile marketing is another fast growing area of digital marketing, estimated for growing at 38% CAGR from year 2011 to 2016. Based on the latest KPCB mobile technology trends by Mary Meeker<sup>15</sup>, mobile digital media time in the US is now significantly higher at 51% compared to desktop (42%). For developing countries such as China, India and African countries, mobile digital media usage is even higher since many low income users started their digital life directly from a mobile device, bypassing computer desktop altogether.

There are three major mobile advertising formats:

- **Display:** Any display advertising viewed or read on a mobile phone including rich media and video advertising. This could be browser-based as well as in-app. Businesses can use services such as Google AdMob to create mobile ads that appear within third-party mobile apps. Facebook's mobile Promoted Post ads also allow advertisers to create ads that are integrated into Facebook mobile app.
- **Search:** Advertising appearing on specific word requests on search engines, viewed on a mobile device.
- **SMS/MMS:** 3rd party ads in SMS and outbound SMS only - this includes advertising either within the body copy of an SMS / MMS message, or outbound messaging. SMS text messaging is also a convenient way for businesses to connect to customers, such as notifications for services, reminders for appointment etc.



IAB reports that total global mobile ad revenue in 2014 reached \$31.9 billion, with an impressive 64.8 percent jump over 2013. Both mobile display and mobile search ad revenue enjoyed high growths, but for the first time ever, mobile display ad earnings topped mobile search earnings. Mobile display ads represented nearly half (47.4%) of the total mobile ad revenue in 2014 and saw the highest growth rate of all mobile ads, at 88.1 percent.

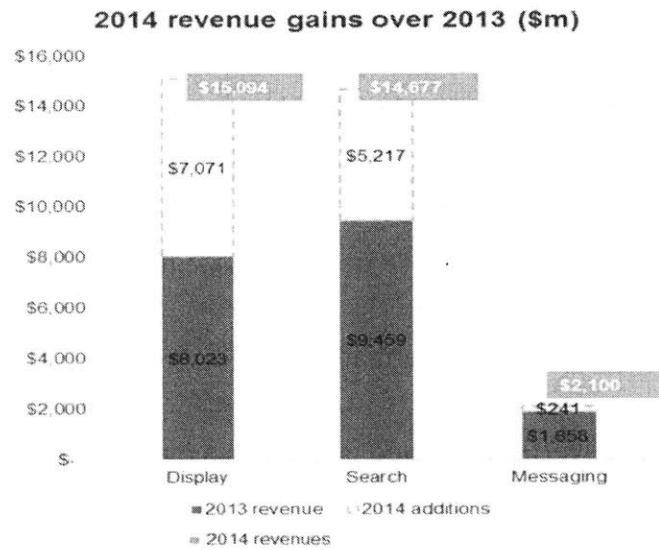


Figure 11 IAB Mobile Global Ad Revenue Report

There are some important considerations for mobile advertising and marketing:

- Responsive web design<sup>16</sup>: businesses shall consider using responsive web design, which is an approach to web design aimed at crafting sites to provide an optimal viewing and interaction experience—easy reading and navigation with a minimum of resizing, panning, and scrolling—across a wide range of devices (from desktop computer monitors to mobile phones).

- Be clear and concise: Mobile devices have small screens, which means words should be used sparingly. Cluttered and crowded ads will just drive users to scroll past. When it comes to mobile, it's best to keep things simple.
- Use "click to call": mobile ads can add click to call links to take advantage of the phone calling capability.
- Use mobile site links: mobile site links display additional links to allow users to navigate directly to specific pages of a website, easing the navigation on mobile devices. According to Google<sup>17</sup>, there are studies showing that campaigns with site links have click-through rates up to 30% higher than campaigns without site links.
- Use location information: one reason mobile computing is so powerful is because the devices move with the users wherever they go. Study shows that 1 in 3 mobile searches have local intent. Users often use mobile devices to search for nearby services in the physical world, such as nearby gas stations, coffee shops etc. Location information is an important piece for mobile marketing especially helping triggering user action and conversion.
- Use QR codes: QR codes are unique image patterns that match to a specific internet resource such as a website. QR code can be easily scanned by mobile devices and is a great tool to bring users from offline medium such as posters to advertisers' online destination.

### 3.5 Video Marketing

In a broad sense, video advertising refers to digital advertising delivered in video format. It intersects with display, search, social and mobile advertising domains. Youtube.com is arguably the world's second largest search engine. In addition, per Facebook's Q3 2015 earnings call transcript, on average there are now more than 8 billion daily video views on Facebook and more than 500 million people who are watching daily<sup>18</sup>. Many of the videos are watched on mobile devices. A research from Ooyala<sup>19</sup> found mobile video consumption has jumped 100 percent year-over-year between the Q1 2014 and the first quarter of this year, and are up more than 360 percent year-over-year since 2013.

Brands can publish video advertisement on their own Youtube channels or Facebook pages. To target viewers for the video ads, brands can use both search engine optimization to show in organic search results or paid placement through search engine marketing.

Brands can also attach video advertisement to other video content. According to IAB guidelines, there are three types of video ad formats<sup>21</sup>:

- Linear video ads - the ads are presented before (pre-roll), in the middle of (mid-roll), or after the video content is consumed by the user (post-roll). Youtube ads often has a skip button that users can click to skip the ad and view the original content directly. It is worth noting that Youtube's TrueView ads program only charges advertisers when a viewer watches for at least 30 seconds of the video ads.
- Non-linear video ads - the ads run concurrently with the video content so the users see the ad while viewing the content. Usually these video ads are displayed at bottom or top of the video player, or transparent so users can continue viewing the original content.

- Companion ads - commonly text, display ads, rich media, or skins that wrap around the video experience.

Just as for any other digital marketing platforms, successful video marketing requires a good strategy that starts with marketer's goals. Whether to increase brand awareness or trigger user actions, marketers can directly use tools from the video hosting platforms and/or partner with ad technology companies, to run video ads campaign to target desired audience and monitor the effectiveness of the campaign<sup>22</sup>.

## Chapter 4. Components and Stakeholders in the Digital Marketing System

In this chapter, we will decompose the complex digital marketing system to identify the major components and stakeholders in the system. We will describe the roles these stakeholders play, and the interactions among them in the system.

Note that in this chapter, we analyze the digital marketing system as it has been largely functioning over the last two decades, without including considerations for the new ad blocking challenge, which we will analyze in detail starting in the next chapter.

### 4.1 Level 1 decomposition of the digital marketing system

At the top level, the stakeholders in the digital marketing system include:

- **Publisher:** Content owners who produce and publish digital content.
- **Advertiser:** Businesses who pay to advertise to end users.
- **Ad Marketer:** This is a subsystem that is also referred to as ad tech. It provides technology and market making mechanism for ads transactions and delivery.

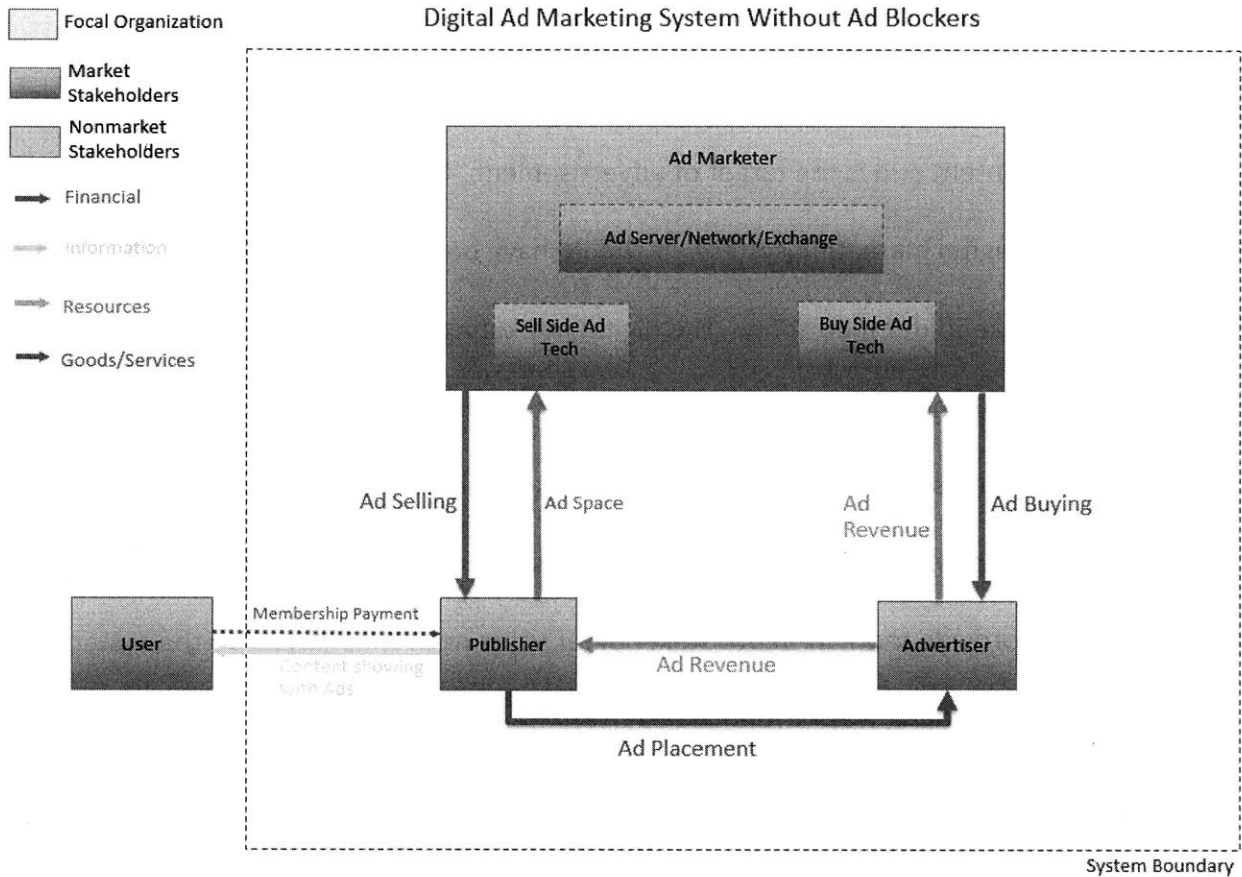


Figure 12 Level 1 stakeholders in the digital marketing system

The level 1 stakeholder map flow is very simple. Publisher provides ad space and receives a share of the ad revenue. Advertiser provides ad spend/revenue and receives ad placement. Ad Marketer is a very complex subsystem that includes many stakeholders, which we will describe more in detail when we decompose the system further down to the next level. At the top level, Ad Marketer acts as the intermediary between Advertiser and Publisher. It provides values including ad creation, ad transaction (buying and selling), tracking and reporting etc. It provides both market places and necessary technologies for enabling the tens of billions of ad transactions annually.

User is another very important stakeholder that relates to the digital marketing system. User consumes digital content and is the target of advertisement. It is interesting to assess whether User is part of the digital marketing system. It should have been included as part of the system. However, as the stakeholder map shows, the digital marketing system, before Ad Blocking was introduced, is able to function without input from User. Therefore, we believe User is external to the digital marketing system before Ad Blocking was introduced. Once Ad Blocking is introduced, the system value flows are changed and User becomes part of the system. In Chapter 6, we will provide more in-depth stakeholder value network analysis on the system before and after Ad Blocking was introduced to User.

There are two major external functions of the digital marketing system:

1. Delivers digital content to User.
2. Delivers advertisement to User.

The first external function is a very important enabler for the proliferation of digital content on Internet over the decades, which can be said to be crucial to the success of Internet as well.

However, the second external function is not entirely desirable by User. In fact, the quality of ad experience has degraded over the years as the digital marketing system seeks to maximize this function without enough consideration for user needs. This has led to the development of ad blocking technology and its popularity in recent years. We will cover this issue in more detail in Chapter 5 and 6.

## 4.2 Level 2 decomposition of the digital marketing system

### 4.2.1 Overview

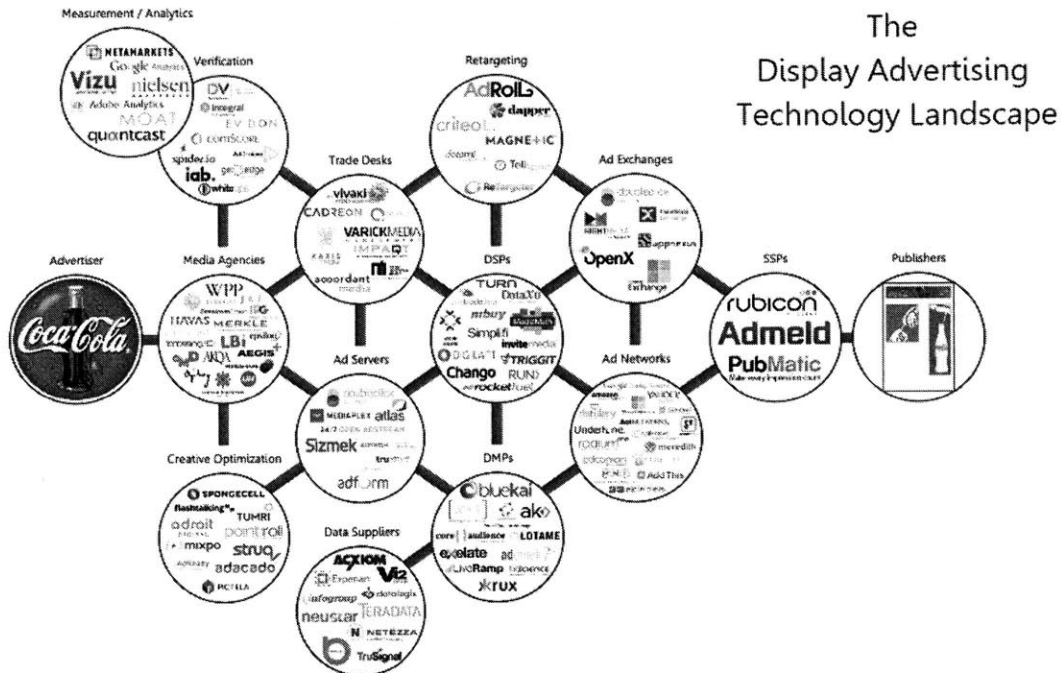
For readers who want to understand how the complex digital marketing system works, level 1 decomposition doesn't reveal much value. Publisher and Advertiser are mostly straightforward and easy to understand. The vast complexity of the system lies in the Ad Marketer subsystem. This subsystem receives a large part of the tens of billions of annual ad spend. For example, Google alone has ad revenue of almost 59 billion US dollars in 2014. This subsystem also includes thousands of companies in the industry as showed in figure 3 the latest Marketing Technology Landscape Supergraphic from ChiefMartec.com. We will next decompose the Ad Marketer subsystem to show its various stakeholders and their roles.

The best resource to understand the ad marketer subsystem that we have found is an interactive presentation at [displayadtech.com](http://displayadtech.com)<sup>22</sup>. The presentation walks through each major component in the system and explains its roles. We borrowed many content from this presentation to describe how this subsystem works internally.

Note that even though the content is noted for display advertising technology, we believe the components and roles are suitable for explaining the entire digital marketing at the overview level. Display advertising is the earliest digital marketing channel. The vast digital marketing industry has evolved around the business models and ad technologies originated from display advertising, then expanding to support new channels or media including search, social, mobile etc.



An overview of the digital marketing system is well represented in this graph below from displayadtech.com<sup>22</sup>:



Reference: [http://www.displayadtech.com/the\\_display\\_advertising\\_technology\\_landscape#/the-display-landscape](http://www.displayadtech.com/the_display_advertising_technology_landscape#/the-display-landscape)

Figure 13 Display advertising technology landscape from displayadtech.com

A major part of the system complexity exists in the interactions among the components. The connections in the graph above is a good representation of the interactions, but does not cover all interactions paths. As we reported earlier, ad marketing is a huge business with tens of billions of revenues annually yet is still experiencing very high growth. Rapidly changing market landscape and technology infusion has created vastly complex dynamics and interactions among the components. New business innovations constantly surface to identify new ways to interact and improve services for advertising needs.

For example, advertisers often hire media agencies to handle the entire ad campaign process, but some advertisers start to build in house expertise to take over part of the process and interact directly with the other components such as verification, analytics, trading desk, DMP etc. Another example, media agencies can hire trading desks to buy ads, or work with Ad Servers, or work directly with DMPs. It can also go through an additional layer of creative optimization which interface with trading desk or ad servers on its behalf.

Therefore, the interactions among the components form a matrix. For educational purpose, it is not very meaningful to build a matrix to list all the possible interactions, since an interaction that does not exist today may be established by new business innovations tomorrow. Instead, the graph above keeps the picture simple and shows the more prominent interactions and flows.

In a modified version of the system component graph below, we replaced the major industry players in a component with its major roles and functionalities, making it easy to see the overall internal process flow of the system at a glance.

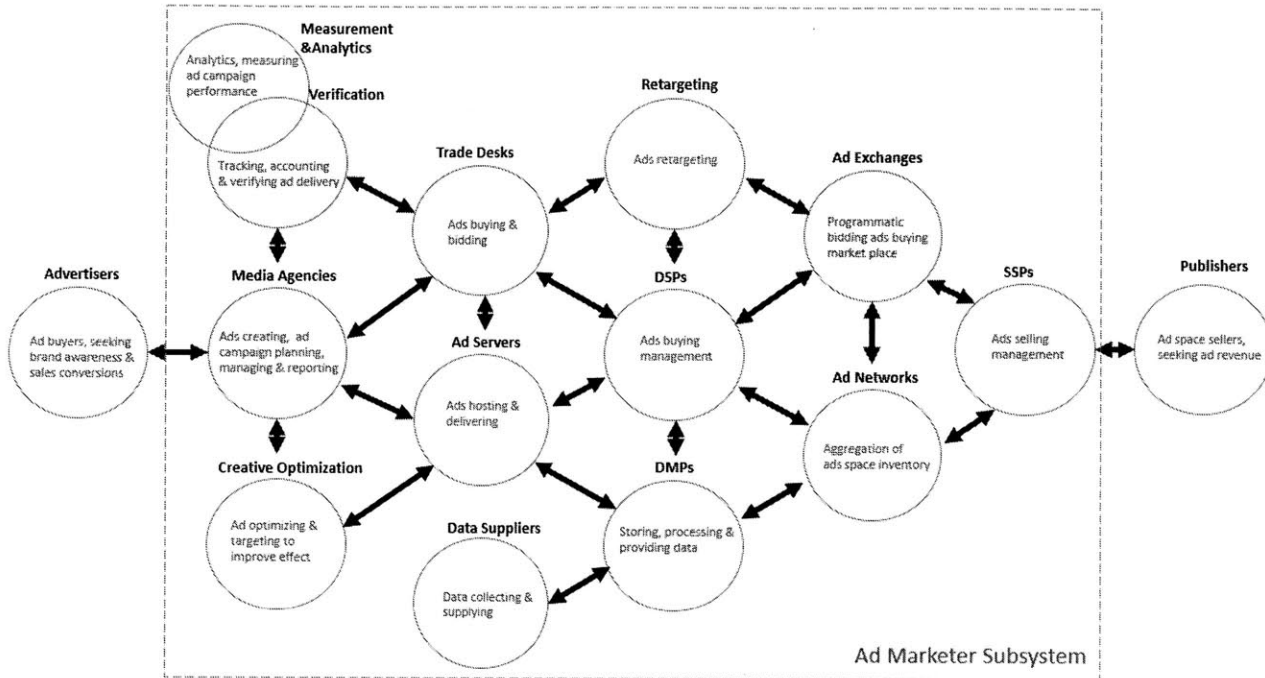


Figure 14 Digital marketing system components and roles

We will explain each component and its major roles in more detail later, but first we list the major external functions that the Ad Marketer subsystem, which is made of these components and their interactions, deliver to Advertiser and Publisher.

The major external functions that the Ad Marketer subsystem deliver to Advertiser include:

- Ad buying
  - Direct buying. Direct buying usually take place for premium ad spaces that are more valuable and attractive to advertisers.
    - Agency. The older form of ad buying involves hiring agencies and traders to manually negotiate with sell side on ad buying. It is more time consuming and expensive, and less efficient than programmatic ad buying.

- Programmatic direct. Buying ads through automated programs instead of human agencies.
    - Bidding. For large amount of commodity ad spaces, they can be efficiently placed to the ad market place to receive bidding, lowering costs for both parties comparing to direct buying.
    - Retargeting buying. Advertisers can directly or indirectly employ retargeting agencies to retarget users who have visited their websites previously.
    - Data driven ad buying. In all of the ad buying activities, online and offline data supplied by data supplier and data management platform can be used to improve the efficiency and accuracy of targeted ad buying.
- Ad delivering and tracking, including verification, accounting, analytics and reporting. It is important that advertisers can verify ad delivery and gather data analytics to analyze and tune ad campaign. Ad delivery verification and accounting determines the payment cost for the ad campaign, so it is very important to be accurate. There are usually several different ad verification systems running in parallel on publishers, intermedia layers and platforms, and third party verification services. Services and processes are developed to consolidate reports from these different delivery reporting systems to determine the actual ad delivery and costs.

The major external functions that the Ad Marketer subsystem deliver to Publisher include:

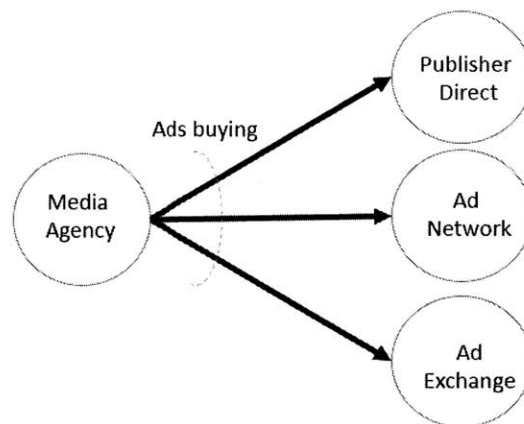
- Ad selling. The system provides a platform for publishers to efficiently sell their inventory and optimize ad revenue. A publisher can also set selling preferences such as

price floor, who it wants its inventory bought by, and the type of advertisements it wants displayed on its site.

- Ad verification and accounting. Publisher implements its own ad verification and accounting systems by itself or using services from Ad Marketers.

#### 4.2.2 Ad Buying

Ad buying is often done by media agencies working with publishers directly or through ad networks and ad exchanges.



Reference: [http://www.displayadtech.com/the\\_display\\_advertising\\_technology\\_landscape#/media-agencies-slide-1](http://www.displayadtech.com/the_display_advertising_technology_landscape#/media-agencies-slide-1)

Figure 15 Media agencies buying from ad inventory

A Media Agency is a service based business dedicated to creating, planning, and handling advertising (and sometimes other forms of promotion) for its clients. Media agencies have long existed before digital marketing, and are hired to handle overall marketing and branding strategies and sales promotions for its clients, including online marketing.<sup>24</sup>

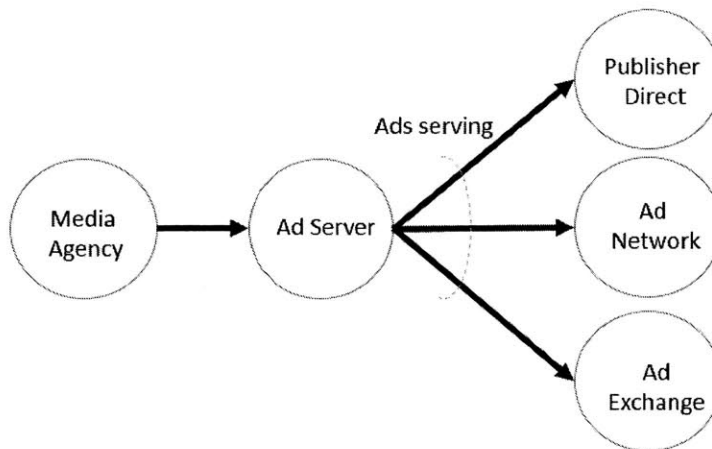
An agency can buy ad inventory directly from publishers or from ad networks or ad exchanges.

An ad network is a company that connects advertisers to web sites that want to host advertisements. The key function of an ad network is aggregation of ad space supply from publishers and matching it with advertiser demand.<sup>25</sup> An ad exchange is a technology platform that facilitates the buying and selling of media advertising inventory from multiple ad networks.<sup>26</sup> It is a programmatic buying market place where prices for the inventory are determined through bidding, and inventory is auctioned to the highest bidder.

#### 4.2.3 Ad Serving

Media agencies and ad networks often use a central ad server to deliver ads to consumers. Ad servers can be run locally by a single publisher, or remotely by third-party ad servers. Local ad servers serve ads to a single publisher's domains, allowing fine-grained creative, formatting, and content control by that publisher. Remote ad servers can serve ads across domains owned by multiple publishers. They deliver the ads from one central source so that advertisers can track the distribution of their online advertisements, and have one location for controlling the rotation and distribution of their advertisements across the web.<sup>27</sup>

Ad server allows media agencies to account and track ad impressions and clicks outside of publishers. This adds a level of verification and is safer than just relying on publishers' numbers alone.



Reference: [http://www.displayadtech.com/the\\_display\\_advertising\\_technology\\_landscape#/media-agencies-slide-2](http://www.displayadtech.com/the_display_advertising_technology_landscape#/media-agencies-slide-2)

Figure 16 Ads serving through ad servers

#### 4.2.4 Tracking, verification, measurement and analytics

Ad tracking and accounting determines the payment cost for the ad campaign, so it is very important to be accurate. Verification, measurement and analytics are also very useful for advertisers to verify ad delivery, analyze ads performance, and tune ad campaign.

One common way to track ads from buyer's side is to append a snippet of tracking code to the ads. It travels with the ads to publishers' websites, ad networks and/or ad exchanges. This snippet of code collects relevant information and sends it back to the tracking and verification server.

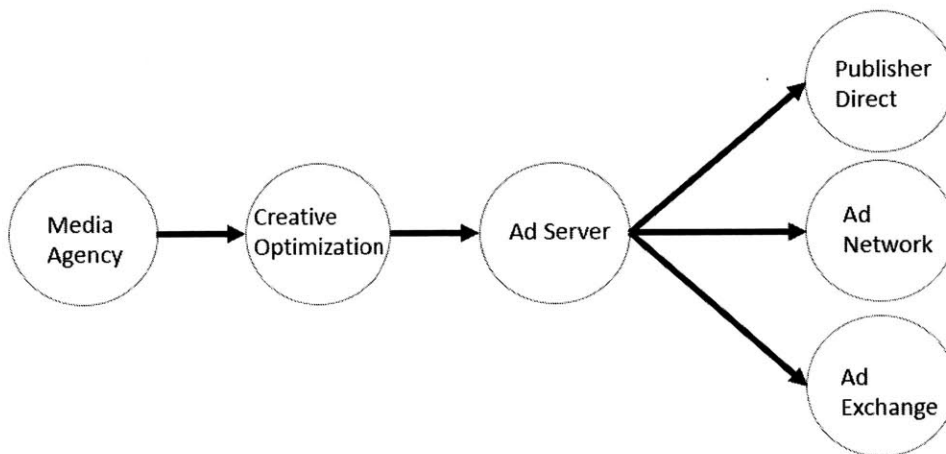
Note that there are usually multiple systems run by different components in the system to track ads at same time, to avoid tracking frauds and data problems resulting from a single point of source. Publishers, buyer agencies, and ad networks or ad exchanges may all have their own systems to track ads. There can be inconsistencies in the way ads are tracked and accounted.

Researching and determining how to reconcile the report from these different systems is part of the ad campaign planning and management process.

#### 4.2.5 Creative optimizing, targeting and retargeting

Creative optimization companies provide services to improve the attractiveness and effectiveness of the ads. The services may include enhancing the appearance of the ads by adding dynamic and interactive ad experiences, transforming and adapting ads to display across all platforms including mobile devices, and using data mining technologies to target ads to more relevant user audience.

Creative optimization is an extra component that can be added to the ad serving process, as showed below:



Reference: [http://www.displayadtech.com/the\\_display\\_advertising\\_technology\\_landscape#/creative-optimization-slide-3](http://www.displayadtech.com/the_display_advertising_technology_landscape#/creative-optimization-slide-3)

Figure 17 Creative optimization enhances the ads

Advertisers want to reach as many consumers as efficiently as possible, and targeted advertising is a useful tool for reaching that goal. Targeted advertising places advertisements



based on various traits from users such as demographics, psychographics, behavioral variables (such as product purchase history), and firmographics.<sup>28</sup> Targeted advertising can also use second-order proxies for targeting, such as tracking online or mobile web activities of consumers, using a search word as the basis for implied interest, or contextual advertising.<sup>29</sup>

Retargeting is also called behavioral retargeting. It is a specific form of targeted advertising that target to users based on their recent online actions, especially when these actions did not result in a sale or conversion such as signing up for advertisement newsletters. The premise is that there is a high probability that those users, who have enough interests to check out a product or service but did not convert, are likely still interested in the product or service, and retargeting serves as a reminder to rekindle that interest and trigger the conversion.<sup>30</sup>

Retargeting tracks users who visit advertisers' websites with a pixel or cookie<sup>31</sup>, both of which are small amount of code snippet embedded in the website content, then serves ads only to these users. Retargeting can be further personalized if the retargeting data tracks more details on a user's activities on advertisers' sites. For example, if a user begins an online order but fails to complete, appropriately deployed retargeting technology can deliver reminder ads to this user who can click the ad to directly access the incomplete order.<sup>30</sup>

In theory, targeted and retargeted advertising are good for both advertisers and users.

Advertisers can segment users and target different users with different messages for effective brand campaign and sales conversions. Users benefit too since they receive ads that are potentially meaningful and relevant to them. However, in practice, targeted and retargeted advertising have raised many concerns and controversies, mostly related to users' privacy rights

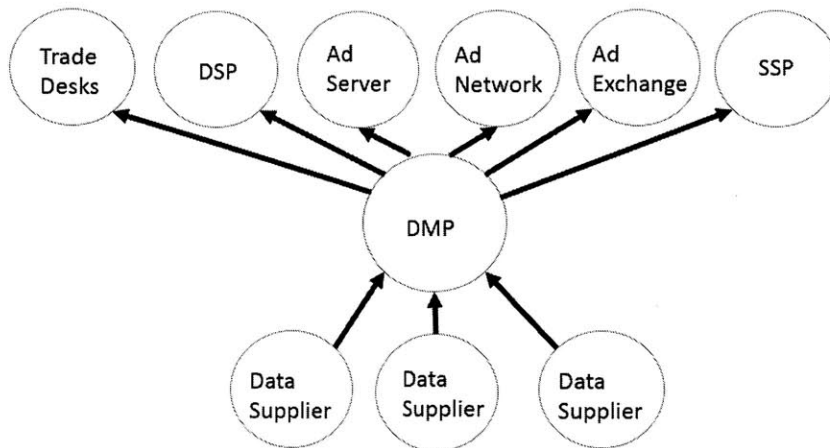
and protection policies. A survey conducted in the United States by the Pew Internet & American Life Project between January 20 and February 19, 2012 revealed that most of Americans are not in favor of targeted advertising, seeing it as an invasion of privacy. Indeed 68% of those surveyed said they are "not okay" with targeted advertising because they do not like having their online behavior tracked and analyzed.<sup>32</sup>

#### 4.2.6 Data supplier and data management platform

Data analytics and technology are widely used in digital marketing, and are crucial for targeted advertising and ad campaign performance optimization.

Data suppliers are companies that collect, compile and sell various online and offline consumer data. Such data include geographic information, household income, lifestyle preferences and shopping behavior etc. Data suppliers sell data to data management platforms.

Data management platforms store, package, and make the data available for various other ad tech components to utilize as showed in the below figure.



Reference: [http://www.displayadtech.com/the\\_display\\_advertising\\_technology\\_landscape#/dmps-slide-1](http://www.displayadtech.com/the_display_advertising_technology_landscape#/dmps-slide-1)

Figure 18 DMP and Data Suppliers providing data to various ad tech components

#### 4.2.7 Demand Side Platform (DSP) and Supply Side Platform (SSP)

As we have discussed, the digital marketing system is a vastly complex system and industry with thousands of businesses providing services for improving the ad campaign performance.

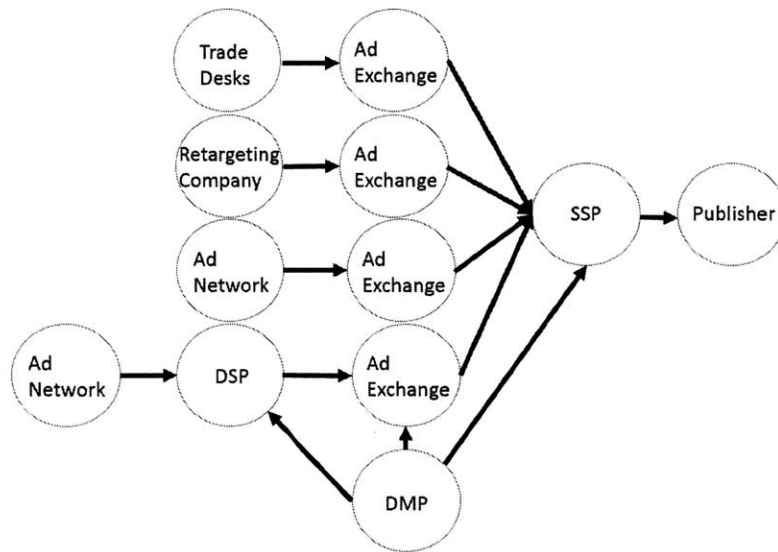
Navigating among the various buying and selling partners in addition to different price level and buying mechanisms can be very challenging. These challenges give opportunities to new buying and selling platforms that provide integrated and easier to use buying and selling services to advertisers and publishers.

A Demand Side Platform, or DSP, is an online platform that provides such enhanced buying services to advertisers. DSPs are popular because they allow advertisers to buy from a wide variety of inventory, control buying strategies, monitor and optimize campaign performance from a single integrated platform.

On the other side, a Supply Side Platform, or SSP, is the online platform that services publishers for ad space selling. Through SSP, publishers can sell ad inventory across various channels, design selling strategies to optimize ad revenue, set preferences such as price floors, who to sell ad space to, type of ads to receive etc.

To enhance the buying and selling experience, both DSP and SSP often integrate with DMP to utilize data and data technology to deliver features such as targeting and retargeting.

Below figure shows how DSP and SSP can play in the ad buying and selling process. Note that there are many ads buying and selling paths. This picture just shows a few of those combinations for illustration purposes. The digital marketing and ad tech industry is one of the most technology driven industry. Underserved business needs are constantly discovered and met by business and technology innovations.



Reference: [http://www.displayadtech.com/the\\_display\\_advertising\\_technology\\_landscape#ssps-slide-2](http://www.displayadtech.com/the_display_advertising_technology_landscape#ssps-slide-2)

Figure 19 DSP and SSP in ad buying and selling process

## Chapter 5. Current Issue: Ad Blocking

### 5.1 Overview

In the previous chapters, we have discussed how the digital marketing industry have seen rapid growth in the last decade, thriving in various forms including search, display, in-app, mobile, and video marketing etc. It is having a larger and larger influence on how marketers market to potential customers. We have also discussed at a high level the various stakeholders in the ecosystem and some of the techniques used by the stakeholders to improve the efficiency of the online marketing process.

However, many of the digital marketing efficiencies improvement come at the expense of users' privacy and online experience. Ads are getting more intrusive and annoying. Ad technique such as retargeting are tracing users' online browsing history to provide more targeted marketing for advertisers. The privacy violating and annoying ads have infuriated users.

Users' desire of more control of their privacy and online experiences has led to the development of a technology called Ad Blocking. Ad Blocking has become increasingly popular in recent years, and has caused significant disruptions in the digital marketing landscape. Based on the PageFair and Adobe 2015 Ad blocking Report<sup>33</sup>, the number of people using ad blocking software globally grew by 41% year over year from Q2 2014 to Q2 2015. During Q2 2015, monthly active users who adopt ad blocking software reached 45 million in United States and

77 million in Europe. The estimated loss of global ad revenue due to blocked ads during 2015 was \$21.8B.

One of the latest news events surrounding ad blocking is Apple's recent announcement of ad blocking support. The new iOS 9, which was released in fall 2015, allows developers to build ad blockers for its built-in Safari browser. This announcement has triggered shock waves in the digital marketing industry, because it means that ad blocking software are now available for mainstream mobile users for the first time. Previously, ad blockers were banned from Android's Google Play store in 2013, and were not technically possible on the iPhone<sup>34</sup>. Given the market significance and popularity of iOS devices, this is a significant event for ad industry and ad blocking.

Although ad blocking technology may have improved users' online experience, it has posted serious challenges to the digital marketing industry and the underline economic models which enabled the proliferation of online digital content. Publishers and ad marketers are hurt by lost revenues from blocked ads. They argue that users should not block ads and consume the digital content for free. Ad blockers appear to represent users' interest in fighting back against intrusive ads, but some ad blockers have started to commercialize their solutions and accept payments from ad marketers in exchange of white-listing the marketers' ads. On the other hand, several ad industry entrepreneurs who believe in the necessity of ads marketing have started ventures to develop ad unblocking technologies. Because of the size of the digital marketing industry, there are billions of dollars at stake from the impact of the ad blocking. As user adoption of ad blocking continues to rise, the contentions among various stakeholders will

keep getting stronger. The digital marketing system must identify a long term sustainable solution, or else the chaos and confusion among stakeholders will start to impact the growth of the industry significantly. Because the online marketing system has been providing the backbone economic incentives for the proliferation of rich Internet content available to the world today, how this challenge is resolved can also have long lasting impact to the modern society at large.

In this chapter, we will walk through the history of ad blocking, provide a high level description of the technology, and discuss the current state of ad blocking in the market place. We will show example screen capturing to illustrate the difference of content viewing experience between with and without ad blocking. We then discuss the responses from various market players such as Publisher and Ad Marketer, including the development of ad unblocking technology.

## 5.2 The history of ad blocking

Ad blocking is a technology that allows Internet users to avoid displaying or downloading advertising content when the users browse internet<sup>35</sup>. The technology is available to users mostly through browser extensions, but there are also other forms such as standalone browsers and mobile apps.

The first widely used ad blocking technology is a browser extension developed by Henrik Aasted Sørensen in 2002<sup>36</sup>. Originally, Sørensen developed the browser extension as a hobby project for challenging himself with something new, but the project became popular almost immediately after Sørensen released the code out to the community. In the following years,

Sørensen moved on his own career, and the ad blocking code was passed around among developers. Early adopters were mostly computer gamers who do not like ads interrupting with their gaming experience.

In 2016, Adblock Plus co-founder Wladimir Palant revamped the blocking code and released Adblock Plus 0.6. The technology began to take off and start to see main stream user adoption.

### 5.3 The state of ad blocking

The rapid rise of user adoption on ad blocking can be well illustrated from this graphic from a blog piece on signal.co by Laurel Wamsley<sup>37</sup>:



## THE STATE OF AD BLOCKING

Around the world, almost 200 million people are now regularly using ad-blocking software, which has seen 41% growth globally over the past 12 months.

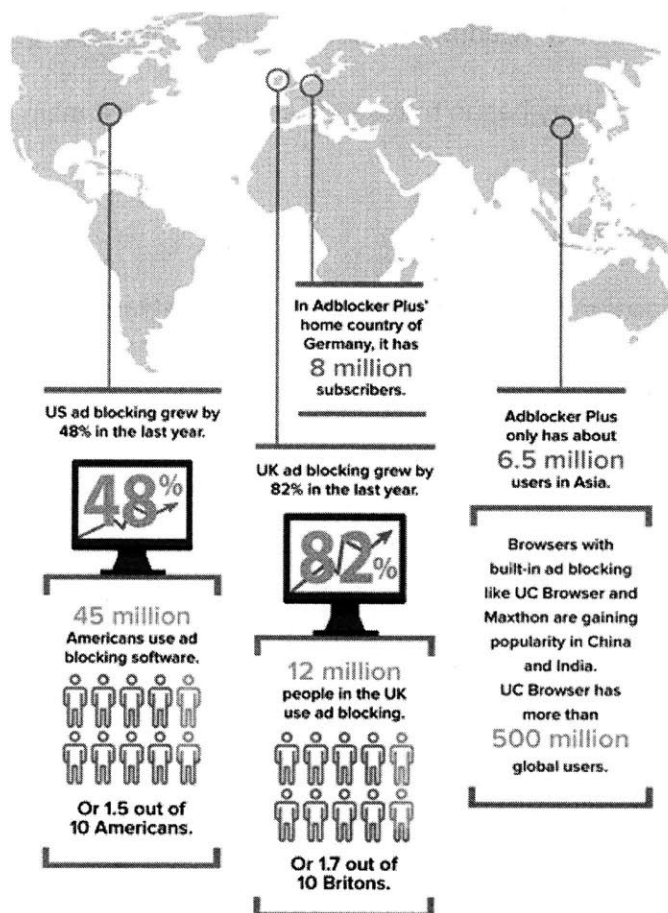


Figure 20 the state of Ad blocking in 2015

Here are some data points relevant to ad blocking that we cite from this blog and the research report “comScore and Sourcepoint: the State of Ad Blocking” dated on September 2015<sup>38</sup>:

- Ad blocking is projected to cost publishers nearly \$22 billion in 2015.
- People between 18 and 29 years old are the most frequent Ad Blocker.

- Ad blocking has seen a higher user adoption rate in many parts of the Europe than in United States. 1 in 10 block Ads in the US and UK, but it's 1 in 4 in France and Germany.
- On average users who block ads consume more internet content than those who do not block ads.
- Among browsers, Chrome users are most likely by far to be blocking ads with 86 million users, compared to 41 million on Firefox. One estimate suggests that Google lost \$1.86 billion in US revenue to ad blocking in 2014.

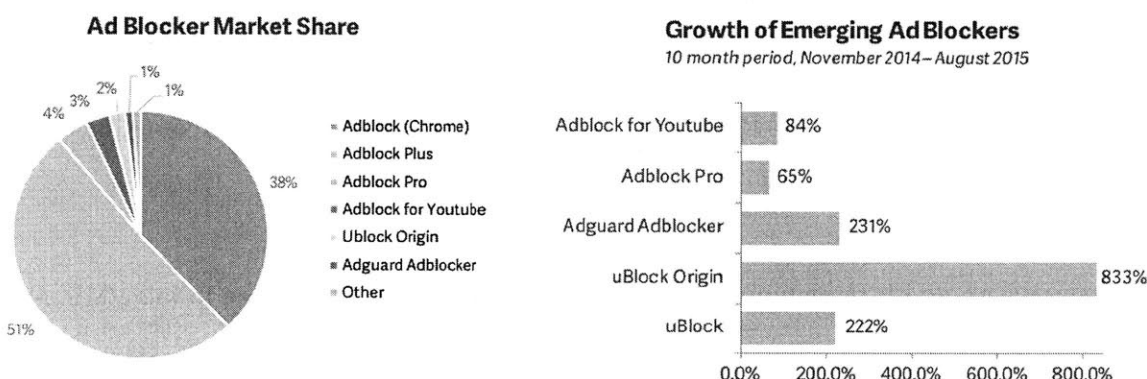
The latest news on ad blocking comes from Apple. In its latest iOS9 release in fall 2015, Apple added feature to support ad blocking. Within a few days, several ad-blocking apps with names like Peace, Purify and Crystal soared to the top of Apple's App Store chart<sup>39</sup>. This is a significant event for the digital marketing industry, and has sent digital marketers scrambling to come up with strategies and solutions to cope with the challenge.

In the ad blocking market place, most popular ad blocking solutions are delivered as browser plugins. Per the same comScore and Sourcepoint report<sup>38</sup>, the #1 popular plugin solution is Adblock Plus owned by German software developer firm Eyeo. As showed in figure 3.2, Adblock Plus owns slightly over half of the market, although there are many other fast growing solutions coming to the market place.

It is worth mentioning that Adblock Plus has an "acceptable ads" program in which it defines certain criterial and allows compliant ads to be displayed by default. Some of the largest ads providers including Google, Microsoft and Amazon have paid Adblock Plus for white-listing their ads through its "acceptable ads" program<sup>40</sup>. The "acceptable ads" program has triggered

controversy among users and industry practitioners, driving some users away to the more “pure” ads blocking software which do not sell for ad white listing.

## Ad Blocker Market Share & Emerging Blockers



**Market for Ad Blockers is Fragmenting.** New entrants like uBlock and Adguard have each grown to over 1 million daily active users in less than a year. Eyeo’s Adblock Plus owns slightly more than half the market, although its “acceptable ads” program is driving users to “pure” ad blocking software.

Figure 21 Ad Blocker Market Share & Emerging Blockers by SourcePoint and comScore<sup>38</sup>

### 5.4 How Ad Blocking works

As described in chapter 4, ad serving on publisher pages are delivered from Ad Servers after an ad transaction is completed in Ad Networks or Ad Exchanges through direct buying or real time bidding. Other third party files, such as tracking cookies and analytic pixel files etc., are also delivered from third party servers providing ad tech services.

On a high level, ad blocking identifies the third party files including ads and tracking cookie etc. based on their hosting source servers, and stops browser from downloading and displaying these data. There are publicly available list of such hosting servers maintained by community of

ad blocking supporters. Ad blocking users can set their blocking tools to use these lists to block the data external to the publisher's site content. For example, Adblock Plus by default enables EasyList, one of the most popular filterset subscriptions with over 12 million subscribers as of August 2011.<sup>41</sup>

## 5.5 Online content viewing experience with ad blocking

To give a direct feel of users' online content viewing experience with ad blocking, below are several example screen captures showing content with ad blocking on and content with ad blocking off. Note that these screenshots are taken from reputable content providers just for examples. The difference in content viewing experience on other publishers' websites can be much more significant.

## Sample Google search with ad blocking off – ads displayed on top and on side






Google

Web Shopping News Images Videos More Search tools

About 9,350,000 results (0.47 seconds)

### Shop for ice melt on Google

Sponsored

 Ice Melt - 50 lb Bag - ULINE <b>\$20.00</b> ULINE	 Ice Melt Skid Lot - 50 lb Bag - ULINE <b>\$850.00</b> ULINE	 Ice Melt - 40 lb Pail - ULINE <b>\$23.00</b> ULINE	 Prestone 9-1/2 Lt. Jug Drive <b>\$8.98</b> Lowe's In store	 Sure Paws Ice Melter <b>\$10.95</b> Mils Fleet Far
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**ULINE - Ice Melt - Huge Catalog! Over 30,000 Products**  
www.uline.com/Ice-Melt  
Same Day Shipping From 11 Locations

### Ice Melt - Snow and Ice Melter at Ace Hardware

www.acehardware.com/family/index.jsp?categoryId... Ace Hardware  
Shop **Ice Melt** at acehardware.com and get Free Store Pickup at your neighborhood Ace. Buy Online & Pickup Today. See Details

### Ice Melt & Traction Control - Home Depot

www.homedepot.com... Snow Equipment The Home Depot  
Shop our selection of **Ice Melt** & Traction Control in the Outdoors Department at The Home Depot

### Shop Ice Melt at Lowes.com

www.lowes.com/Outdoors/Snow-Removal-Prep/Ice-Melt\_N\_.jpl Lowe's  
Find **Ice Melt** at Lowes.com. Shop a variety of quality **Ice Melt** and **Ice Melt** that are available for purchase online or in store.

### Best Rock Salt and Ice Melts Review - Consumer Reports

www.consumerreports.org Home Home & Garden Consumer Reports  
The same thing goes for **ice melt**, also known as rock salt, snow melt, deicer, and a few other monikers. That's where the Consumer Reports **ice melt** guide will...

### Ice & Snow Melt Products

www.advantagechemicalcorp.com/ Highly Concentrated, Non Corrosive, Non Tracking, & Safe to work with.

### Ice Melter Free Shipping

www.valtecindustries.com/IceMelter Granule or Liquid **Ice Melter** Environmentally Safe - Non-Flammable

### City Bags Wholesalers

www.cbwsupply.com/ Calcium Chloride - Calcium Chloride **Ice Melt-Ice Melt** Products Call Now

### Snow & ICE Melt, Free S&H

www.factorydirectchemicals.com/ (877) 678-0194 Calcium Chloride works Fast & Safe. Buy Factory Direct with Free S&H

### Safe Ice Melt at Amazon

www.amazon.com/garden 4.4 ★★★★★ rating for amazon.com Shop for Safe **Ice Melt** at Amazon! Free Shipping on Qualified Orders

### Ice Melt At Walmart

www.walmart.com/Snow-Removal Save On Snow Removal. Free Shipping Site To Store 770 Broadway, Saugus, MA (781) 815-5374

### Ice Melt at Home Depot

www.homedepot.com/

## Sample Google search with ad blocking on – no ads displayed

Google ice melt

Web Shopping News Images Videos More Search tools

About 9,360,000 results (0.48 seconds)

**Ice Melt - Snow and Ice Melter at Ace Hardware**

www.acehardware.com/family/index.jsp?categoryId... Ace Hardware  
Shop **Ice Melt** at acehardware.com and get Free Store Pickup at your neighborhood Ace. Buy Online & Pickup Today. See Details.

**Ice Melt & Traction Control - Home Depot**

www.homedepot.com... Snow Equipment The Home Depot  
Shop our selection of **Ice Melt** & Traction Control in the Outdoors Department at The Home Depot

**Shop Ice Melt at Lowes.com**

www.lowes.com/Outdoors/Snow-Removal-Prep/Ice-Melt.../pl Lowe's  
Find **Ice Melt** at Lowes.com. Shop a variety of quality **Ice Melt** and **Ice Melt** that are available for purchase online or in store.

**Best Rock Salt and Ice Melts Review - Consumer Reports**

www.consumerreports.org Home Home & Garden Consumer Reports  
The same thing goes for **ice melt**, also known as rock salt, snow melt, deicer, and a few other monikers. That's where the Consumer Reports **ice-melt** guide will ...

Sample YouTube video with ad blocking off – 30 seconds pre-roll ads



Part 1 How to start a mower that has been sitting for years

Sample YouTube video with ad blocking on – no pre-roll ads



Part 1 How to start a mower that has been sitting for years

Yahoo home page with ad blocking off – banner ads and in page ads displayed

A screenshot of the Yahoo! homepage with ad blocking disabled. The page features a navigation bar at the top with the "YAHOO!" logo, a search bar, and user account information. A large banner advertisement for FanDuel is prominent, offering a "\$300 DEPOSIT BONUS" for "ONE-WEEK FANTASY FOOTBALL" on October 10th. Below the banner, there are several news articles and sections. The main article is titled "U.S.: CIA-backed Syrian rebels under Russian blitz". To the right, there is a "Trending Now" section with a list of names and a "Live concert" section for Grace Potter. The "Only on Yahoo" section includes articles about urbanization, the Benghazi panel, and guns. The "Top Stories" section lists news about a Benghazi investigator and a gathering in Washington. At the bottom, there is an advertisement for "2015 Mortgage Rates" showing a "Huge Dip - 2.97% APR".

Yahoo home page with ad blocking on – no banner ads and in page ads displayed

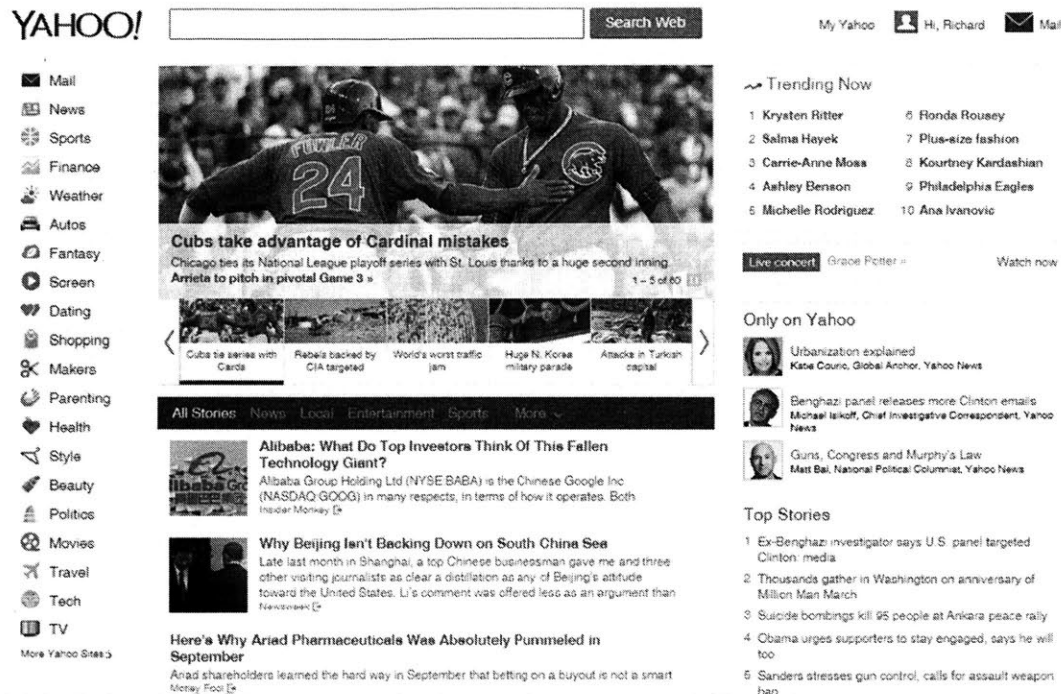


Figure 22 Comparisons of content viewing experience between with ads blocking on and off

As the above comparisons show, ad blocking appear to enhance users' online content viewing experience even on these reputed content publishers. On top of the improvement for viewing experience, ad blocking also benefits users with privacy protection, faster page loads, and reduced network and computing resource consumption from downloading and parsing the third party ads related data files. These benefits ad blockers bring to the end users are real, tangible and enticing.

### 5.6 Controversy around ad blocking and industry responses

The rising trend of ad blocking has posed serious challenges to the digital marketing industry. On one hand, the industry acknowledges that the problem of intrusive ads and privacy violation



has led to users' overwhelming adoption of ad blocking technology. On the other hand, Publisher and Ad Marketer argue that ad blocking is threatening the fundamental economic model which allows publishers to provide rich Internet content to everyone for free. They argue that users should not block ads and consume content for free.

To illustrate the controversy around ad blocking, consider this dramatic event around the iOS9 ad blocking announcement. Marco Arment, the developer of the #1 iOS selling paid ad blocker app Peace, pulled his app Peace from the Apple store several days after the app's astonishing success. Here is his quotes for the decision<sup>42</sup>:

"Ad blockers come with an important asterisk: while they do benefit a ton of people in major ways, they also hurt some, including many who don't deserve the hit."

"If we're going to effect positive change overall, a more nuanced, complex approach is required than what I can bring in a simple iOS app."

Next let's review some of the responses we have seen from the industry side.

Several large Publisher and Ad Marketer seem to have taken the approach of paying market leading ad blocking products to white-list their ads. For example, Google, Microsoft, Amazon, and Taboola are paying the owner of Adblock Plus to unblock ads on their websites at a fee of "30% of the additional ad revenues" they would have made were ads unblocked, according to this Financial Times report.<sup>43</sup> One possible speculation of the motive is that because there is a large sheer amount of ad revenues at risk, these industry giants are willing to pay and collaborate with ad blocking vendors to keep the majority of the ad revenue until a more meaningful solution surfaces in the industry.

Without deep pockets, smaller publishers are more on their own with regarding to searching for solutions. Many small publishers have cut back on staffing resources and content production as a result of financial impact from losing ad revenues. Some publishers have tried to offer ad-free subscription services, but as you may have guessed, it only received lukewarm responses from users. According to Niero Gonzalez, CEO of gaming community Destructoid, he presented an option for an ad-free experience, but found that less than 1% of his 4 million unique monthly visitors signed up for the \$2.99/month subscription<sup>44</sup>. In addition to trying paying membership service, some publishers have started to experiment with asking users for other forms of value, for example, asking users to fill out surveys, as figure 23 shows below.

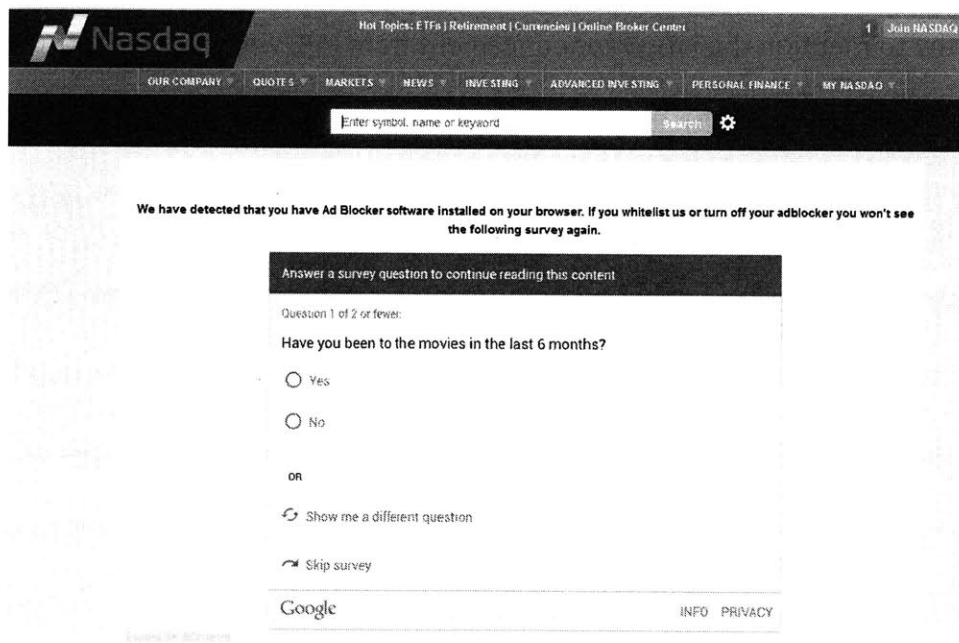


Figure 23 Example website asking ad blocker users to answer surveys

Seeing the needs from Publisher to cope with Ad Blocker, entrepreneurs have started businesses to develop ads unblocking technology and services. For example, former Googler veteran Ben Barokas has cofounded Sourcepoint which received \$10 million in Series A investment funding in Jun 2015. According to this Business Insider report <sup>45</sup>:

“Sourcepoint wants to help the publishing community solve two problems:

It has the technology to punch through "all the Ad Blocker."; and it wants to help publishers have a more open dialog with readers about the transaction that takes place when they consume content: The implicit (but often over-looked) understanding that publishers serve ads in exchange for content being presented for free. And that a transaction needs to take place in the first place because content requires investment.”

Last, it is worthy to mention the latest announcement from IAB, which represents 650 advertising and tech companies that produce 86 percent of all Internet ads in the US. On Oct 15, 2015, IAB Tech Lab published a blog post to acknowledge the error of the industry<sup>46</sup>:

“Through our pursuit of further automation and maximization of margins during the industrial age of media technology, we built advertising technology to optimize publishers’ yield of marketing budgets that had eroded after the last recession. Looking back now, our scraping of dimes may have cost us dollars in consumer loyalty. The fast, scalable systems of targeting users with ever-heftier advertisements have slowed down the public internet and drained more than a few batteries. We were so clever and so good at it that we over-engineered the capabilities of the plumbing laid down by, well, ourselves. This steamrolled the users, depleted their devices, and tried their patience...

We lost sight of our social and ethical responsibility to provide a safe, usable experience for anyone and everyone wanting to consume the content of their choice.”

In the same post, IAB is launching the L.E.A.N. Ads program:

“Supported by the Executive Committee of the IAB Tech Lab Board, IABs around the world, and hundreds of member companies, L.E.A.N. stands for Light, Encrypted, Ad choice supported, Non-invasive ads. These are principles that will help guide the next phases of advertising technical standards for the global digital advertising supply chain”.

As illustrated above, the ad blocking phenomena and the underlying ads problem that it exposed have become very significant. There are a lot of awareness and controversy around the problem. But there is not a consensus on solutions yet.

In the next chapter, we will apply stakeholder value network analysis to the digital marketing system. We will attempt to analyze the ad blocking issue and evaluate possible solutions including the L.E.A.N program and the other approaches we listed above from stakeholders’ value perspective.

## Chapter 6. Applying Stakeholder Value Network Analysis to Ad Blocking

We believe that ad blocking has exposed conflicting stakeholder interests in the system, and long term systematical solutions can only be achieved by analyzing the stakeholder values and finding a balancing point. In this chapter, we apply the stakeholder value network analysis methodology to the digital marketing system, qualitatively analyze the value paths for different stakeholders, and try to identify long term systematic solutions that satisfy the most important value paths.

Due to time and resource constraints, we cannot obtain large scale of data from the system stakeholders to provide a solid quantitative analysis. Instead, we choose to focus on qualitative analysis on the stakeholder values. It is worth pointing out that we have seen many online blog and comments from users, publishers and ad tech industry professionals debating on the controversy around Ad Blocker. These posts help us make certain assumptions on stakeholder preferences and values in our qualitative analysis.

We first analyze the digital marketing system before Ad Blocker was introduced. As you will see, the analysis shows how the intrusive ad problem gets started. We then analyze the system after Ad Blocker was added to the system, accompanied by Ad UnBlocker.

In our analysis, we focus on analyzing the value loops for each stakeholder. We show that the value loops encompass the various attempted solutions we saw from the market space, and we use the analysis to evaluate whether these solutions promise to solve the challenge systematically.

Note that in our analysis we did not include any non-market stakeholders such as industry watchdog or regulation bodies. This is based on our assumption that the digital marketing system is mostly self-regulated. There are some forms of privacy protection for Internet users regulated by government policy makers and industry watchdogs, for example, referring to this “Advertising and Marketing on the Internet: Rules of the Road” guide from the Federal Trade Commission.<sup>47</sup> But overall the fast growing Ad Market is driven by business and technology innovations. The regulation bodies do not provide significant values to the stakeholders in the system. It is also unclear whether there is any need or desire for stronger regulation. Instead, we prefer finding a systematic solution that is driven by business and technology innovations to align the value interests among stakeholders.

## 6.1 Stakeholders

First, we need to decide at which level of system decomposition we want to analyze the stakeholders. A key stakeholder that is relevant to this decision is the Ad Marketer stakeholder. As Chapter 4 showed, it is a subsystem that includes many different ad tech stakeholders such as Ad Networks, Ad Exchanges, DSP, SSP, etc. We decide to analyze the stakeholders at the level 1 decomposition, treating Ad Marketer as a single subsystem. For our analysis focusing on the ad blocking issue, all the ad tech stakeholders interacts with the other stakeholders collectively as the Ad Marketer subsystem.

Below is a list of the stakeholders in the digital marketing system before ad blocking was introduced:

- Publisher: Content owners providing digital content to User.

- Advertiser: Businesses advertising to end users.
- Ad Marketer: The ad tech subsystem providing technology and market making mechanism for ads transactions and delivery.
- User: Targets of digital advertisement. It consumes digital content.

## 6.2 Digital marketing system before Ad Blocker was introduced

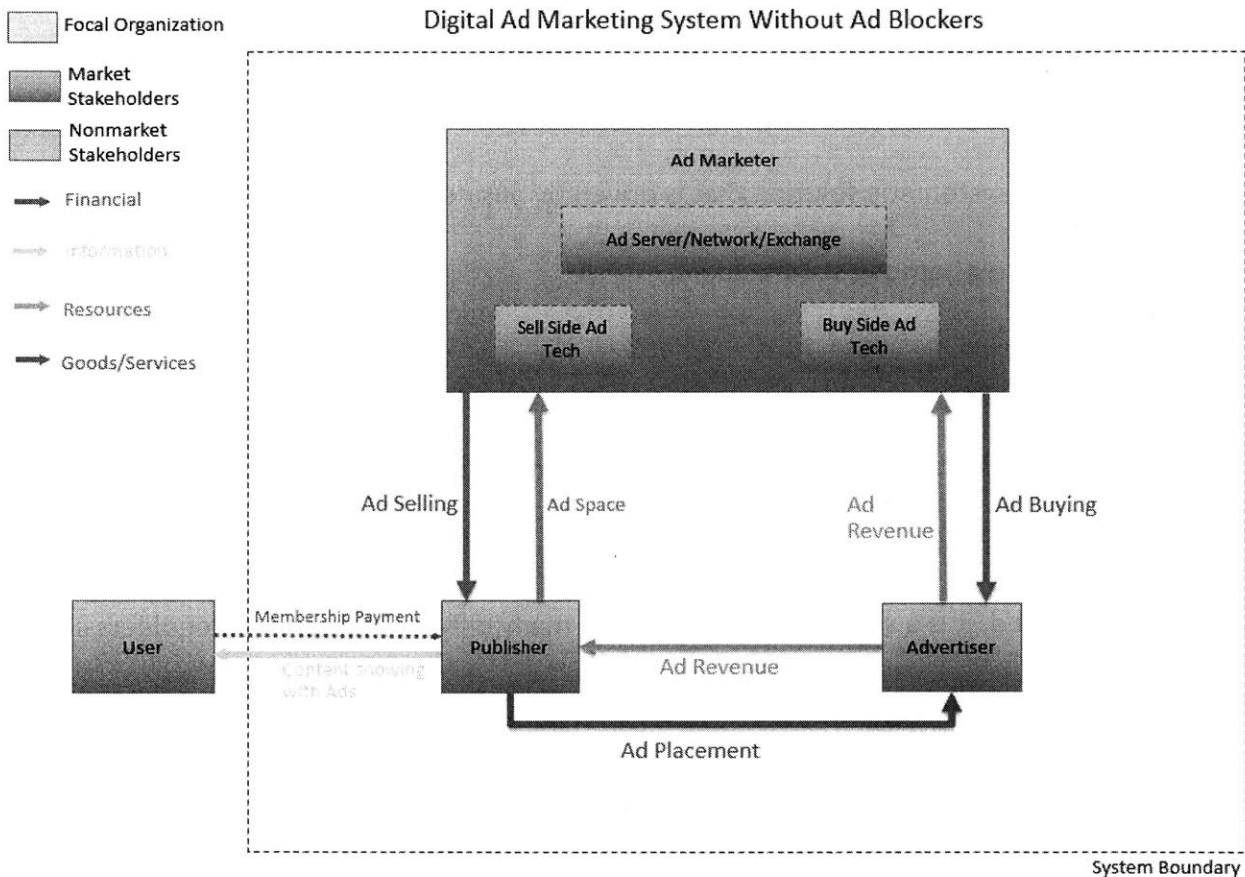


Figure 24 Digital marketing system without Ad Blocker

In the system without Ad Blocker, User don't have any control over ads viewing and have little control over privacy options. Ads are always displayed alongside content. Retargeting techniques such as third party cookies or pixel files are widely used to track User's browsing

behavior. As figure 24 and 25 show, the value loops for all the other stakeholders can be completed without involving User because User does not provide any necessary input to the other stakeholders. As a result, User is not included in the boundary of this system.

The only stakeholder that performs value exchange with User is Publisher, but only in the content space not ads. Publisher focus on building high quality content to attract more users and attract users to spend more time viewing its content, so that it can maximize the value of its ad space for selling to the Ad Marketer and Advertiser. In most cases, User do not provide any value to the Publisher, other than the indirect value add to the Publisher' ad space. There is a possible value exchange from User to Publisher through membership payment, but this business model is far less popular than the ad revenue model. It has a very small scale in the market place, therefore its effect is largely ignored in our analysis for the digital marketing system.



### 6.3 SVN Analysis for digital marketing system before Ad Blocker

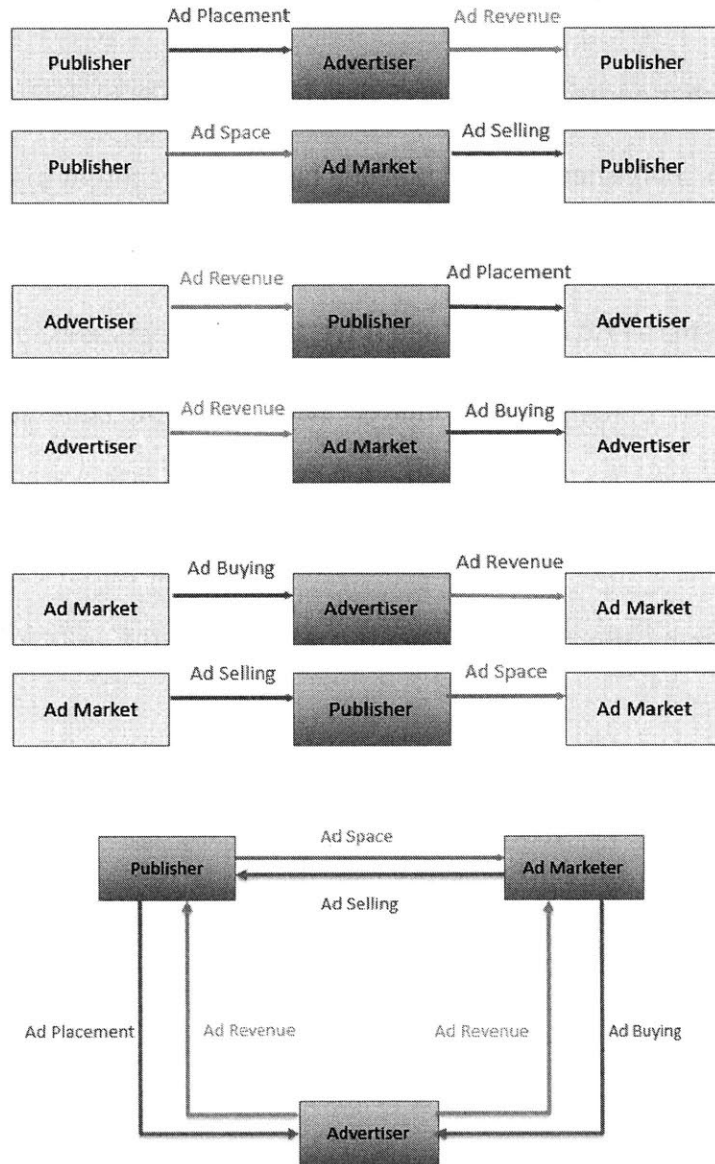


Figure 25 Stakeholder value loops for digital ad marketing system without Ad Blocker

The above diagram shows the value loop for each stakeholder in the system before Ad Blocker was introduced. The value loops are all aligned in one direction – to maximize the quantity and quality of ads marketing from these stakeholders’ perspective.

The goal of Ad Marketer is to maximize the fee revenue it receives. To achieve this goal, it focuses on maximizing the market efficiency for matching ads demand from Advertiser and ads supply from Publisher. It invents ads technology such as retargeting to help improving the effectiveness of ads from Advertiser' perspective, and therefore increasing the volume of ads transactions.

The goal of Advertiser is to maximize the advertising effect per budget spent. It leverages the technology prowess of Ad Marketer to help it choose ads space supplies more effectively, and it also pushes for technology such as retargeting to achieve its desired target marketing.

Publisher first focuses on maximizing the market value of its ads space by building up its user base. It then needs to increase its exposure in the ad market as much as possible to maximize the selling volume and price of its ads space. As a result, Publisher has incentive to adopt popular ads technology such as retargeting. Publisher may have considered User's concerns on privacy and ad experience, but most publishers, especially small publishers, do not have enough power to negotiate with the more powerful buy side stakeholders from Ad Marketer and Advertiser. On the other hand, since User doesn't really have any option in controlling ads viewing, Publisher has little incentive to prioritize on User's needs and risk losing ads revenue.

As a result, this system was designed to optimize the process to deliver ads to as many User as possible, to target User as best as it can, and to use the most effective ad methods perceived by Advertiser. Unfortunately, without considering User's needs, many of the optimizations are achieved at expenses of User's values. Poorly designed ads annoy User and negatively impact User's content viewing experience. Ad techniques such as retargeting make users feel losing



Because User can now use Ad Blocker to allow or disallow ads, it has become an important stakeholder in the system. The value loops for Advertiser to receive ads impression must now include User. Publisher can only provide ads space, which no longer automatically equates to ads impression. There is no value in the ads space to the Advertiser if User does not allow the ads to be shown. In fact, if an ad is blocked, it is not counted in the ads transaction and Publisher does not receive payment for that ad space.

Once User becomes an important stakeholder in the system, we believe that the other stakeholders Publisher, Ad Marketer and Advertiser would have to change their value exchanges to accommodate the values of User. We used the red dotted boxes to highlight these affected value exchanges, notably we believe that ads will have to become much more user friendly and respect User's choices on privacy and ads viewing. In our stakeholder value loop analysis, we show that the solutions promoting more user friendly ads hold promises to become long term solutions for the ads blocking problem.

2. Ad Blocker is a new stakeholder in the system.

It provides important values to User for controlling online privacy and ads viewing options. Some Ad Blocker vendors also accept payments from Publisher and Ad Marketer to allow their ads to be white-listed. However, as we show in the value loop analysis, this solution and its value exchange conflict with important values of other stakeholders. As a result, we question the promise for this solution to become a sustainable solution for the system.

3. Ad UnBlocker is a new stakeholder in the system.

Ad UnBlocker is being developed to circumvent Ad Blocker to allow Ad Marketer and Publisher to continue deliver ads to User even when Ad Blocker is used. It is not currently available in the market yet, but there are several businesses working on commercializing such solutions. Ad UnBlocker provides the “forced” ads delivery service to Ad Marketer and Publisher in exchange of fees or ads revenue sharing. In the value loop analysis, we show that this solution and its value exchange also conflict with values of other stakeholders, and therefore we also have doubts on it becoming a sustainable solution for the system.

## 6.5 SVN analysis for digital marketing system with Ad Blocker

Since the number of stakeholders and their value exchanges are limited at level 1 system decomposition, we simply map out all the value loops for each stakeholder in the system. For each value loop, we evaluate how many stakeholders it includes, and whether it conflicts with any stakeholder’s value loop. We believe that a systematic solution must satisfy the needs of a majority of stakeholders, and it should not conflict with the needs of any major stakeholder.

### 6.5.1 User accepting user friendly ads

First, we present a solution that met this criteria and looks promising as a systematic solution. This solution is for the ad industry to change ad marketing practices to deliver user acceptable ads. The L.E.A.N ads initiative proposed by IAB seems to be working towards this direction and in our view holds promises to solve the problem from its root.

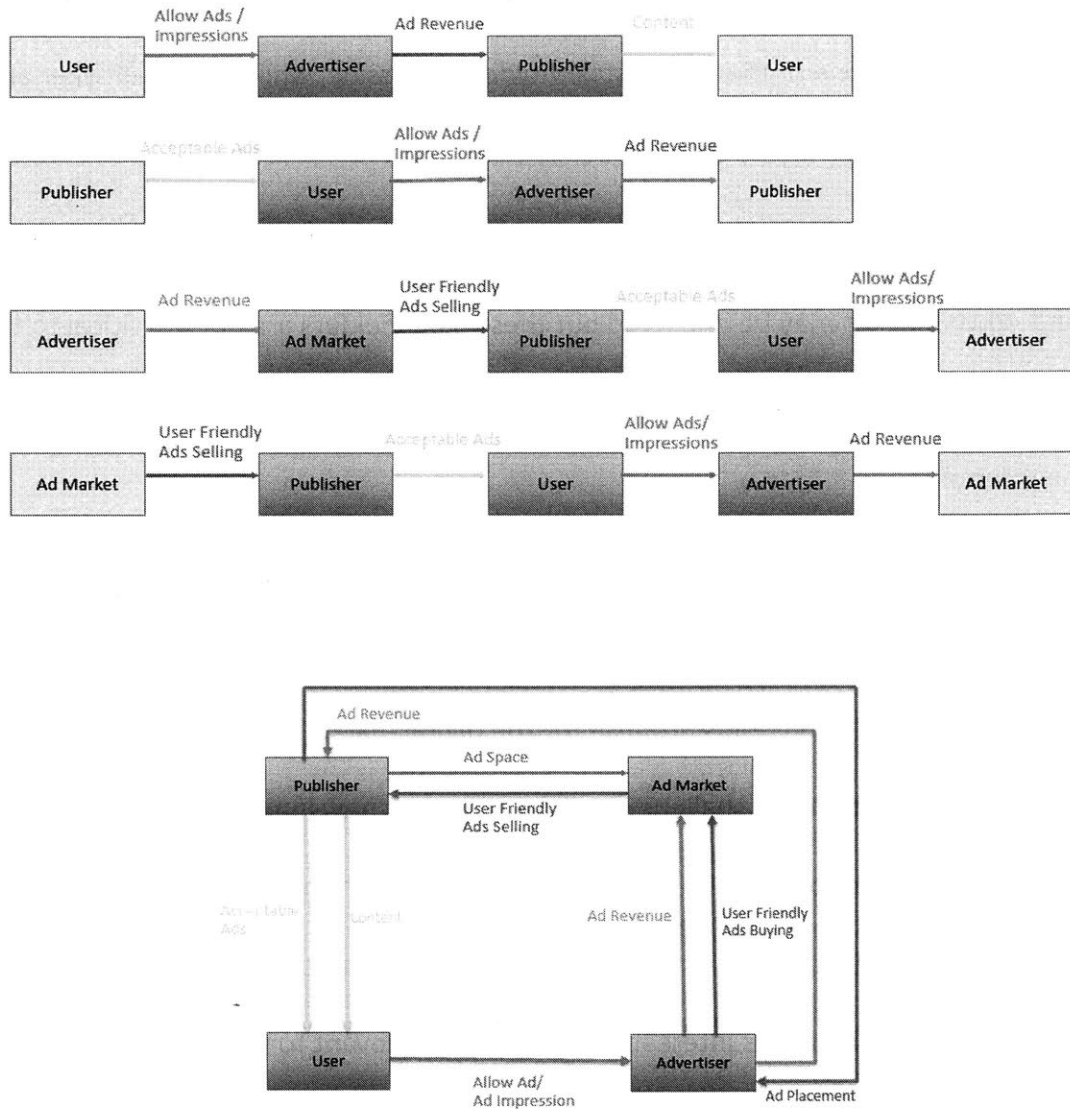


Figure 27 Value loop – User accepting user friendly ads

As figure 27 shows, it is possible to align the value loops of the majority of the stakeholders in the ad marketing system: User, Publisher, Ad Marketer and Advertiser. Due to time and resource constraints, we did not gather quantitative data to conduct a value loop quantitative analysis. But it is reasonable to assume that these four stakeholders, who provide money, content, market place and infrastructure, and human attention, are much more important than

the other two stakeholders Ad Blocker and Ad Unblocker. The digital marketing system would not function at all if any one of these four stakeholders is missing, while the Ad Blocker and Ad Unblocker stakeholders have only come into place over last several years.

This solution does not conflict with any major stakeholders' value loop. The values of Ad Blocker and Ad Unblocker may be impacted but these stakeholders are not as critical to the system. They can also transform their services to provide values in this solution and become part of the solution.

Granted, there will be a lot of challenges in defining and implementing user friendly ads, but it is still possible. Ad marketing system has always been thriving with business and technology innovation. Since this solution holds promise for the digital marketing system to function on the long run, we believe that the challenges will be solved by new innovations in the business and technology space. In Appendix A, we included the results from a user survey we collected around digital ads and ad blocking. One interesting finding is that over 30% of the respondents choose to declare their digital ads interests to receive ads relevant to them. It shows that there are rooms for user centered digital advertisement innovation to deliver the optimal ads experience for users.

Next, we describe the other value loops we found in our analysis. We found that these value loops capture the other attempted solutions we saw from the market place. However, these value loops conflict with the needs of other major stakeholders, therefore facing challenges in becoming sustainable system solutions.

### 6.5.2 Users paying for content without ads

This value loop involves only User and Publisher. The solution we saw in the market place is that instead of receiving ad revenue, Publisher charges User for membership payment, or obtain other value from User such as requiring User to complete online surveys.

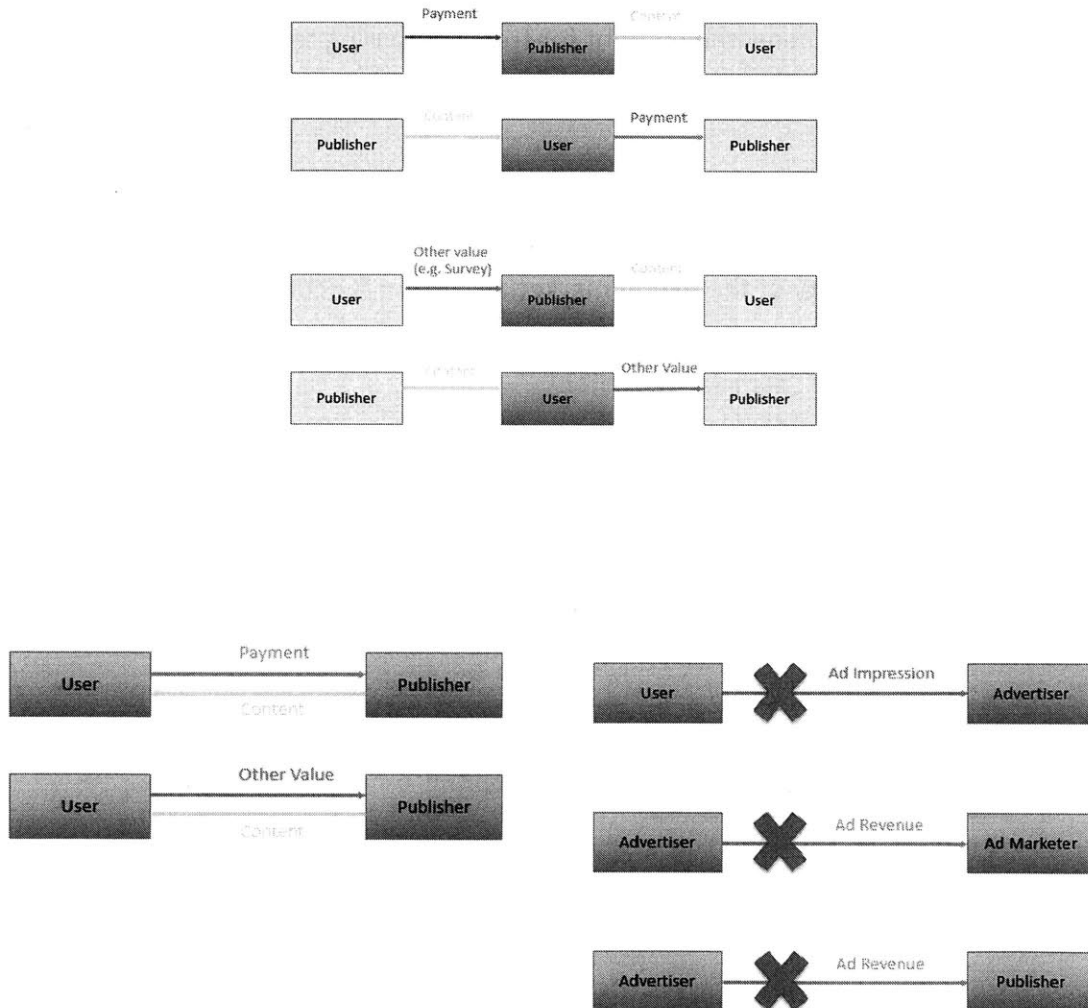


Figure 28 Value loop - User providing payments or other value to Publisher

The first problem with this value loop is that it excludes the needs of Advertiser and Ad Marketer. Advertiser can't reach User in this value loop, and Ad Marketer can't receive ad

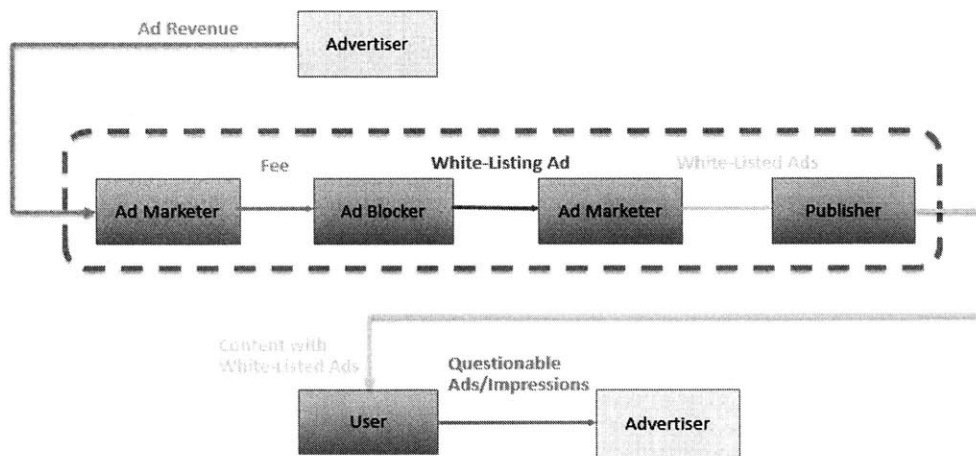


revenue. Since this value loop excludes hundreds of billions of ad revenue from Advertiser, and excludes technology and information infrastructure heavy weight such as Google and Facebook, its effect is going to be very limited. Secondly, it is reasonable to assume that most users have been accustomed to viewing digital content without paying, therefore the value loop also conflicts with the needs of a majority of users. In our user survey, 50% of the respondents chose to disable ad blocker and consume content for free, comparing to 4.2% of respondents who chose to pay.

Given these shortcomings, this solution may be viable for certain premium content publisher, but it cannot replace the majority of the digital marketing system function.

### 6.5.3 Ad Blocker white-listing ads from Ad Marketer

In this value loop, Ad Marketer pays Ad Blocker to white-list its ads.



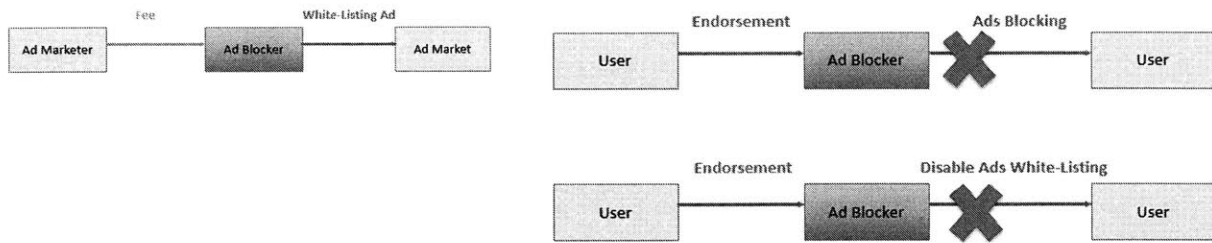


Figure 29 Value loop - Ad Blocker white-list ads from Ad Marketer

The biggest problem with this solution is that it conflicts with the needs of User. The fundamental reason User uses Ad Blocker is to block ads. When Ad Blocker start to profit from white-listing ads, it runs risks of agonizing the User. This is happening in the market place. After the #1 Ad Blocker Adblock Plus started its “acceptable ads” program, through which Ad Marketer can pay to work with Ad Plus to get its ads white-listed, some of Adblock Plus’s users have switched to other more pure ad blocking products. Concerned about losing trusts from User, products such as Adblock Plus usually provide User an option to disable the ads “white-listing” feature. But when User chooses to disable the ads “white-listing” feature, they break the value exchange between Ad Marketer and Ad Blocker. For example, in Adblock Plus, the “white-listing” feature is enabled by default, but users can turn it off if they want to, as showed in the screenshot below. The conflict of interests with User’s values limit the usefulness of Ad Blocker’s white-listing program.

## ABP Adblock Plus Options

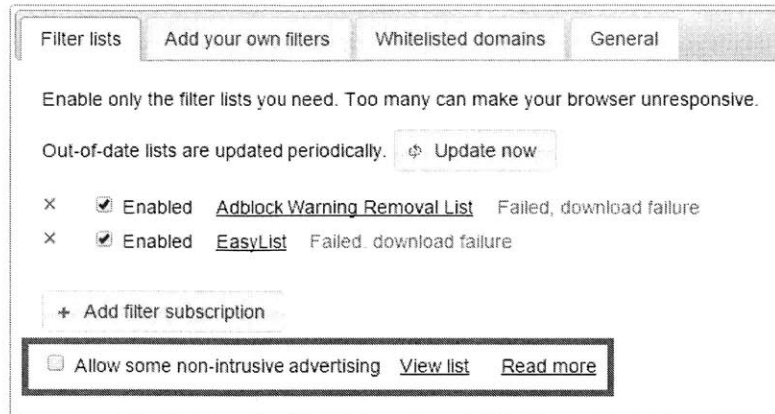
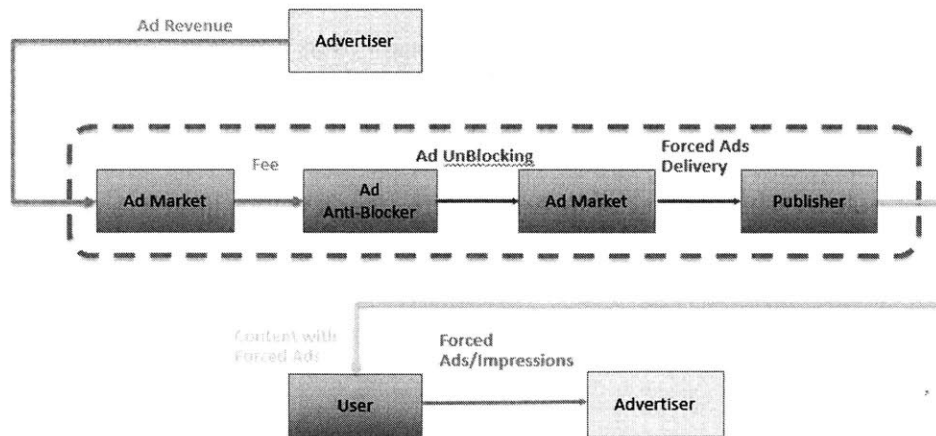


Figure 30 Option to disable “white-listed” ads in Adblock Plus

### 6.5.4 Ad UnBlocker force ads delivery for Ad Marketer

In this value loop, Ad Marketer pays Ad UnBlocker to unblock and deliver ads to User even if Ad Blocker is turned on.



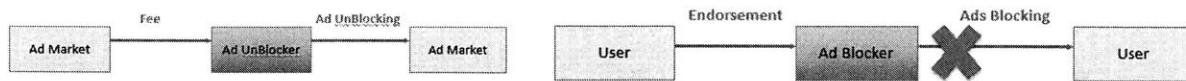


Figure 31 Value loop - Ad UnBlocker force ads delivery for Ad Marketer

This solution is launched by ad tech industry veterans who believe in the necessity of ads in the digital marketing system and want to give Publisher and Ad Marketer tools to battle Ad Blocker. The challenge with this solution is that it is directly competing with the value loop between User and Ad Blocker, in which User choose to use Ad Blocker to block annoying ads. Without fundamentally change on what ads are delivered to User and how they are delivered, this solution puts Publisher and Ad Marketer at risks of further agonizing User. Since the market has come to realization that User is one of the most important stakeholder, Publisher and Ad Marketer will want to align their needs with User's needs instead of creating even more resentment. The Ad UnBlocker solution by itself does not look promising to become a systematic solution.

## 6.6 Summary of a user survey on digital ads and ad blocking

We conducted a user survey on digital ads and ad blocking. The respondents are from MIT's System Design and Management community and a law firm with over 30 employees. We believe the respondents represent a mixture of users with different level of computer proficiency. There are total 72 responses.

The actual responses from the Google survey are included in the appendix. Below are some highlights we found interesting from the responses:

1. 43.1% of the respondents chose “the ads are annoying, but I am ok with them”, while 36.1% of the respondents chose “the ads are really annoying and I hate them”.
2. When asked why they don’t like the ads (with multiple choices), the top three reasons are “the ads start playing audio and video without my consent” (76.4%), “the ads make it difficult for me to view content” (61.1%), “the ads distracts me from viewing content” (58.3%).
3. 25% of the respondents never heard about ad blocking, while 33.3% of the respondents use ad blocking right now.
4. When asked what to do (multiple choices) when their sites require users to either disable ad blocking or become paid members, 50% of the respondents chose to disable ads and consume the content for free with the ads, while 44.4% of the respondents chose to start looking for other sites providing similar content but still allowing ad blocking.
5. In a question asking whether users are willing to share their products/services needs to receive ads relevant to their interests, 33.3% of the respondents actually chose to share their interests. We think it shows that there are rooms for user centered digital advertisement innovation to deliver the optimal ads experience for users.
6. 20.8% of the respondents said they have provided feedback on ads that they don’t but they don’t think it makes any difference on what ads they receive. It is again interesting that a good percentage of users is actually spending their time and effort providing feedback to the ads they receive. This data, in our opinion, shows opportunities for the other stakeholders to collaborate with users.

## Chapter 7. Summary and Conclusions

### 7.1 Summary

In this thesis, we have provided an overview of the digital marketing system and industry. We explained the industry, the important characteristics of digital marketing, and some details on the practices and strategies for the major marketing channels. We decomposed the system at two levels, with the second level decomposition providing more details to the internal system component interactions and process flow of the Ad Marketer subsystem or Ad Tech industry.

We next discussed the current challenge of Ad Blocking to the digital marketing system, including its origination, its user adoption trend, and controversy around ad blocking and various market responses. We applied stakeholder value network analysis to the digital marketing system around the Ad Blocking problem, to illustrate how the ads problem got started, and how various solutions in the market place stand on becoming sustainable solutions to solve the ads problem for the long term.

### 7.2 Conclusions

Through the discussion, we know that the digital marketing system is a vastly complex system and the industry is enormous in size comprised of thousands of businesses. The digital advertisement model is crucial in supporting the proliferation of free digital content to people around the world, enabling democracy and equality in information accessibility. It is vital that the system finds a sustainable and systematical solution to solve the ads problem, which was

exposed by the Ad Blocking controversy, in order to sustain the system and the digital advertisement model for the long run.

Through our stakeholder value network analysis, we believe that the systematic solution to this problem can only come when the system finds ways to ensure advertisement are acceptable to users. Our small user survey has showed that industry collaborations with users are possible. A non-trivial amount of users in our survey are open to sharing their product and service needs and are willing to provide feedback on why they do not like ads. We believe that the Ad Blocking challenge also bring forth the opportunity for the industry stakeholders, publishers, advertisers and ad marketers, to focus on user experience and improve the digital marketing system to be efficient and user friendly.

### 7.3 Contributions

By summarizing many discrete information online, this thesis presents a cohesive and easy to read explanation of the digital marketing system, its internals, and the Ad Blocking controversy. This thesis also applied stakeholder value network analysis to evaluate the existing market solutions towards the Ad Blocking challenge, illustrating the importance of delivering user acceptable ads as the direction for systematical solutions to solve the ads problem and improve the system.

### 7.4 Future Work

The thesis illustrates the importance of delivering user acceptable ads. Future work may investigate further how to develop systematic solutions to achieve this goal. Future work may focus on applying user centered design to define requirements, and collaborating with Ad

Marketer industry companies and organization such as IAB to enable business and technical innovations for developing such solutions.

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## Appendix: Responses from a user survey on digital ads and ad blocking

# 72 responses

[View all responses](#)

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## Summary

### CONSENT TO PARTICIPATE IN SURVEY

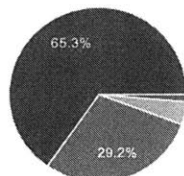
#### Questions on Ads

##### Q1. What websites do you visit most often for news, information, or entertainment?

Npr.org, Boston.com, Facebook  
BBC  
drudge, cnn.com, espn.com, AIER  
yahoo.com, youtube.com, huffingtonpost.com, cracked.com  
New york times, Wikipedia  
yahoon.com, reuters.com,  
jomada.com.mx  
News website - bbc, cnn, NYtimes, Youtube  
Reddit, google  
new york times  
Fox, Google  
Politico, Boing Boing, Slashdot, Vox  
Google  
google  
Netflix, Facebook, Guardian, Amazon, Google.  
yahoo, wsj, msn  
google news, youtube, airliners.net, bbc  
law360, national review, cnn, 凤凰网  
BBC, Google News, MSN  
CNN  
news.google.com  
www.wenxuecity.com  
msn.com; cnn.com; bbc.com; ndtv.com  
Google News, NY Times, Press from my country, Business Insider, Twitter  
bloomberg,cnn,bbc,foxnews  
fox news, cnn, msn  
Weather channel, Google, MSN  
Theverge.com, news.google.com  
Google News, Boston Globe, Emol.com  
facebook.com, twitter.com, boardgamegeek.com  
WSJ.com, twitter.com, linkedin.com  
NPR, Facebook

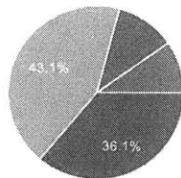
yahoo, fox news, cnn  
 cnn, msn, people.com  
 Google  
 Google News(app), Apple News(app), NYT(app), LAT(app), CBS, Facebook  
 Yahoo news, google  
 www.baidu.com  
 Google News, Apple News  
 google news, youtube, netflix  
 google, yahoo, naver  
 BBC, NPR, Weixin, etc  
 google.news.com,  
 CNN.com, YouTube, Amazon Prime Video  
 yahoo.com, cnn, sina.com.cn  
 youtube, google  
 google, link to various content  
 reddit, bbc, salon, wired  
 http://www.greentechmedia.com  
 yahoo, abajournal, cnn, solarmovie, netflix  
 reddit.com, theverge.com, wikipedia.org  
 NeoGaf, 4chan, Something Awful, Slashdot  
 youtube  
 Google news  
 Google News, Boston Globe, Washington Post, New York Times  
 google news  
 Yahoo! Japan, Facebook, YouTube  
 News  
 My times, business insider, NDTV  
 NY Times, Folha de Sao Paulo (Brazilian news), Vox.com, twitter feeds of news sites  
 Google, CNN, Facebook  
 youku, immigrationlaw360, espn, amazon,  
 slashdot.org, facebook.com cnn.com yahoo.com  
 Google, Channelnewsasia. My own RSS feeds from Reddit  
 coursera, edX, Lexology, Economist  
 http://www.kcrg.com; http://espn.go.com/  
 cnn, espn, crunchbase, nytimes  
 Facebook  
 ESPN, WSJ, NY Times, the Atlantic, 538  
 Cnn.com (website), Usatoday.com (iphone app), facebook (website and app)  
 Google News, MSNBC, Gawker

**Q2. Do you have paid membership for the sites?**



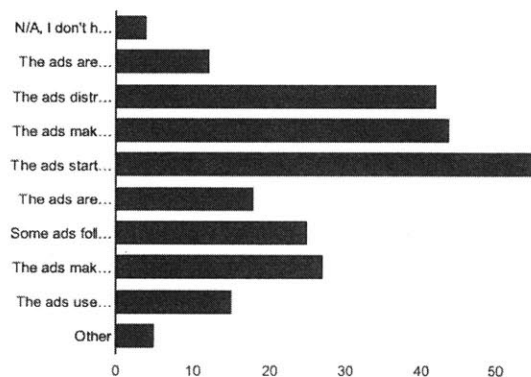
I have paid membership for all sites.	0	0%
I have paid membership for most sites.	1	1.4%
I have paid membership for about half of the sites.	3	4.2%
I visit most sites for free.	21	29.2%
I visit all sites for free.	47	65.3%

**Q3. Do you like the ads on the sites?**



The sites I visit do not have ads.	0	0%
No, the ads are really annoying and I hate them.	26	36.1%
The ads are annoying, but I am ok with them.	31	43.1%
The ads are fine, and I find some of them interesting.	8	11.1%
I really like the ads.	0	0%
Other	7	9.7%

**Q4. If you don't like the ads, what are the reasons?**



N/A, I don't have any problem with the ads.	4	5.6%
The ads are silly and ugly.	12	16.7%
The ads distract me from viewing content.	42	58.3%
The ads make it difficult for me to view content.	44	61.1%
The ads start playing audio and video without my consent.	55	76.4%
The ads are out of context with what I am viewing.	18	25%
Some ads follow me after I visit the vendors' site, making me feel being spied.	25	34.7%
The ads make the page load slower.	27	37.5%
The ads use my mobile data bandwidth.	15	20.8%
Other	5	6.9%

**Q5. If you like the ads, what are the reasons?**

I do not like the ads.

informative and useful for daily life

sometimes ads are interesting and allows opportunity to learn new information

They are sometimes useful

relevant to what i was looking for

Ha. no. NO.

Interesting. The ads can be skipped when I don't like. They don't distract me.

I don't, they have become too invasive

Wonder how they got selected cookies and what's their arrangement with web server/website.

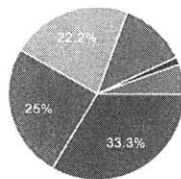
some ads with funny pics



Superbowl Ads are fun.  
 Especially on google news, I get to learn about good products  
 If they are relevant to what I am looking for (or had intentions to buy)  
 I like that the ads allow me to get the content from these sites without a subscription fee.  
 only the funny ones :)  
 Interesting and sometimes, helpful  
 funny, interesting  
 I don't  
 Without the ads, I would have to pay to access the information, so it is an acceptable nuisance.

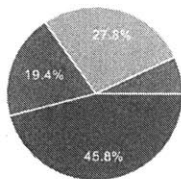
## Questions on Ad Blocking

**Q6. Do you know you can use free Ad blocker software to block ads on websites?**



Yes, I use ad blockers right now.	<b>24</b>	33.3%
No, I never heard about it.	<b>18</b>	25%
I have heard about it, but haven't got time to try it.	<b>16</b>	22.2%
I have heard about it, but the ads are not bad enough for me to do that.	<b>9</b>	12.5%
I have heard about it, but not sure how I can get it.	<b>1</b>	1.4%
Other	<b>4</b>	5.6%

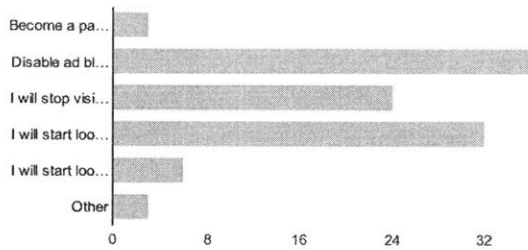
**Q7. Will you use ad blocking software against your most favorite website, and stop seeing the ads?**



Yes. Why not? It is free.	<b>33</b>	45.8%
No, I know the website publisher needs to make money from the ads, and I want to support them making the content free to everyone.	<b>14</b>	19.4%
Maybe, when I feel the ads really annoys me.	<b>20</b>	27.8%
Other	<b>5</b>	6.9%

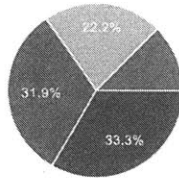
## Questions on Ad choice

**Q8. If a site detects your use of ad blocking, and requires you to disable ad blocking or become a paid member with no ads, what would you do?**



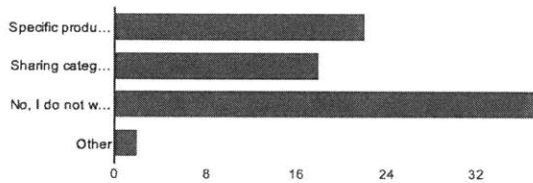
Become a paying member with no ads.	3	4.2%
Disable ad blocking, live with the ads and enjoy the content for free.	36	50%
I will stop visiting the site.	24	33.3%
I will start looking for another site that provides me similar content but still allows ad blocking.	32	44.4%
I will start looking for another site that provides me similar content and has ads that I like better.	6	8.3%
Other	3	4.2%

**Q9. If you choose to view ads instead of paying for content, which of the following would you prefer for the ads you receive?**



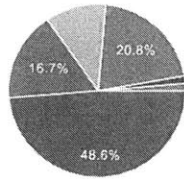
Share the kind of products/services I am interested in, so I see ads relevant that interest me.	24	33.3%
Not sharing any interests, and prefer truly random ads.	23	31.9%
Not sharing any interests, and prefer current ads which may have targeted me based on my browsing history or other identity information.	16	22.2%
Other	9	12.5%

**Q10. If you are willing to share your interests on products and services, what would you be willing to share?**



Specific product or service that I am currently in market for, so I may receive promotional offers as I browse Internet.	22	30.6%
Sharing categories of products or services that I am generally interested in.	18	25%
No, I do not want to share what I am interested in.	37	51.4%
Other	2	2.8%

**Q11. Have you ever reported on an Ad you don't like and provided feedback on why you don't like the Ad?**



I have never seen this or paid attention.	<b>35</b>	48.6%
No, I have not done this, but I will consider it when I see it.	<b>12</b>	16.7%
I have seen this, but didn't bother to spend my time on the feedback.	<b>8</b>	11.1%
Yes, I have done this and provided feedback. But I don't think it makes any difference.	<b>15</b>	20.8%
Yes, I have done this and provided feedback. I think it made difference in the kind of ads I receive.	<b>1</b>	1.4%
Other	<b>1</b>	1.4%

### Number of daily responses

