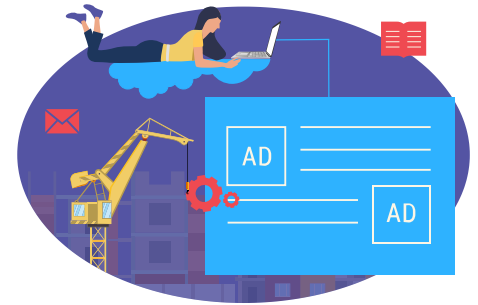


Digital Advertising Fundamentals

Ad Tech History

Ad Tech History Overview

- The beginning of the ad tech space can be traced back to the 1990s, with the advent of the ad network
- The industry evolved from manual ad buying to utilizing real-time auctions
- Over time, DSPs and SSPs arrived to help advertisers and websites buy and sell ads across many different exchanges in one place
- Rapid industry growth occurred in 2007 when Microsoft, Yahoo, Google, and Facebook acquired ad tech companies
- Today, the space is more complex than ever before



Marketing Channels and Ad Formats

Advertising Formats Overview

Digital advertising is made up of a diverse set of ad formats. These include:

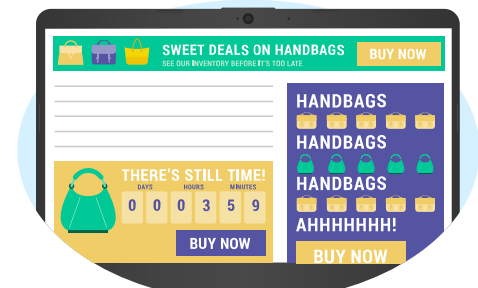
- Search
- Banners (also known as 'display')
- Native
- Video
- Over-The-Top (OTT)
- Connected TV (CTV)
- Streaming Audio
- Digital Out Of Home (DOOH)
- Augmented/Virtual Reality (AR/VR)

Not every format falls exclusively into one category; there can be overlap. As digital capabilities continue to grow, so does the diversity of ad formats.



Banners

- Display ads can be static or have movement (like a gif)
- Display ads can be dynamic, which allows advertisers to change components of the ad based on the page or person
- High-impact ad units are display ads that take up more real estate and occasionally include interactivity
- Rising star ads are the standardized versions of high-impact ad units



Digital Video

- In-stream video are ads that run within a broader video content stream, similar to traditional commercial breaks
- Out-stream video are video ads that run alongside content rather than within video content; they are most commonly found within a social media feed between either text or video posts
- Long form video is video content that is at least 20 minutes long, and short-form content is under 20 minutes



Streaming Video

- Streaming video has taken off over the last several years, through streaming service providers such as Netflix and Hulu
- OTT, or over-the-top, is streaming video content that is consumed over the internet rather than via cable or satellite
- CTV, or connected TV, is an Internet-connected TV that allows viewers to stream video content



Mobile

- Standard mobile ad units are typically smaller than standard display ad sizes (300x250, 300x50, 350x50)
- Mobile devices contain two different environments: web or browsers and apps
- Mobile web operates similarly to desktop web
- SDKs (software development kits) are used by apps to enable features such as downloads and engagement tracking and to provide the SDK owner(s) with valuable data about users
- Mobile apps, particularly mobile gaming apps, drive a large volume of spend within the mobile channel



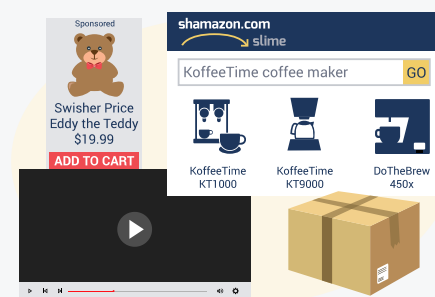


Native

- Native ads are defined as ads that take on the form and functionality of the environment that they live within
- Users tend to be more responsive to native ads versus standardized ads, since they look more organic
- There are many types of native ads, the most popular being ads on social media platforms

Retail Media Overview

- Retail media is advertising that is run on a retailer's site or app, or is targeted to a retailer's audience off-site
- Retail media allows brands to advertise on the “digital shelf,” similarly to how they would in a physical store
- Retail media consists of sponsored product ads, display ads, and video ads
- Retail media can appear on a search results page, a product category page, a product detail page, a check out page, off-site, and more
- Retail media integrates relevancy rules which tailor the types of products that will be shown to specific shoppers
- The key players in the retail media space are retailers, advertisers, shoppers, and retail media networks



Perspective of a Marketer



The Marketer's Funnel

- Marketers use the “funnel” as a construct to map out their customer journey, in order to help them better strategize and execute marketing plans
- The funnel starts broad, with awareness, and gets more narrow to focus on the customers more likely to make a purchase
- Marketers may use different versions of the funnel, with different stages and sequences, or they may use entirely new constructs that fit more easily into today's fragmented, non-linear consumer journey
- Marketers use the funnel to inform their decision-making around the who, what, where, when, and how of marketing

Agencies

- Agencies facilitate the majority of digital ad spend and help marketers transact with sellers of marketing products/solutions
- Agency structure spans many functions, such as advertising services, marketing services, and technology
- Agencies have different cost models, depending on their business model and their customers
- The “Big Six” agency holding companies dominate the agency world, and digital ad spend in general



How a Marketer Thinks

- The 6M Model is a framework Marketers use to organize their campaigns:
- Mission: Define the objective of the campaign
- Market: Determine the audience
- Message: Craft a message by researching the market's needs
- Media: Consider what media will best serve the message and reach the right market
- Money: Determine how to get people to buy more goods and services while being efficient with spend
- Measurement: Evaluate the success of the mission and how much it cost to achieve it

Perspective of a Publisher

Perspective of a Publisher Overview

- Publishing is the act of making information, literature, music, software, and other content available to the public for sale or for free. Media has evolved from its early days of print to include globally available content via the internet.
- Publishers focus on creating great content for their users to consume, but have a wide range of other responsibilities and considerations, from the user experience, partner or broker selection, and choosing the right revenue streams.
- Publishing in the 21st century allows content to be accessed anywhere, anytime. This explosion in publishing and content availability has given advertisers unprecedented opportunities to reach their target audience across a variety of publisher properties.



How Digital Media is Bought and Sold

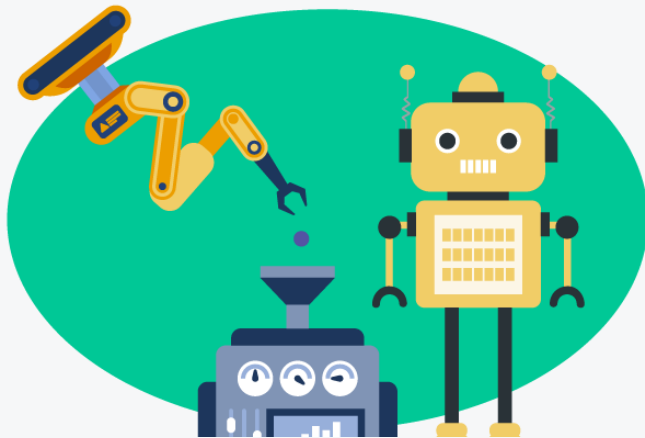


Intro to Buying & Selling Digital Media

- Publishers started to sell ads on their sites by selling directly to advertisers
- Eventually, this became difficult, as there were too many publishers and advertisers to match up
- This led to the rise of programmatic marketplaces, which helped connect publishers and advertisers in a single place, while also adding valuable automation to the transaction process
- The two key types of digital advertising transactions are direct and programmatic buying and selling

Direct Buying

- Direct buying is when buyers and sellers work directly with each other to agree on the terms of an advertising campaign and execute that campaign
- An IO (insertion order) is the contract that is used to outline the terms of the direct transaction between buyer and seller
- Benefits of direct buying
 - For a publisher: higher rates, guaranteed quantity, easier planning and forecasting of revenue
 - For an advertiser: access to quality ad space, guaranteed placement
- While direct buying is still important in the digital advertising space, it is declining in favor of indirect buying



Programmatic Buying

- Programmatic advertising uses technology to automate the buying and selling of digital ads between many buyers and sellers
- Programmatic seller benefits:
 - Access to new potential buyers/advertisers
 - Ability to generate revenue without direct sales or contracts
 - Ability to maximize revenue while meeting market expectations around price
- Programmatic buyer benefits:
 - Easy access to millions of publishers and websites
 - Ability to set up, launch, and make changes to campaigns quickly
 - Centralized view of delivery across all partners and inventory
 - Direct access to controls

Ad Technologies

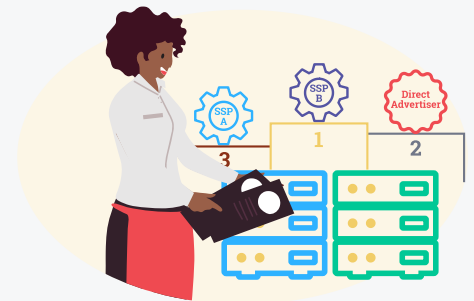
Ad Technologies Overview

- Publishers' websites and apps generate impressions that advertisers buy.
- There are a number of ad tech firms in between that help facilitate a transaction between the publisher and the advertiser.
- In the coming lessons, we will dive into each of these types of ad tech firms in more detail.

Ad Servers

The ad server is software that is critical for both the publisher and the advertiser.

- The publisher ad server kicks off the process of showing an ad on a website or app:
 - When a user visits a publisher's website or app, the publisher ad tag sends a signal to the publisher ad server, saying it is time to show an ad.
 - The publisher ad server decides which ad partner will pay the highest price for a particular ad impression.
- The advertiser ad server has three main functions:
 - Manage creative assets
 - Track delivery
 - Generate a post-campaign delivery report. This report is reliable because an advertiser ad server is independent and most likely to capture actual delivery, due to the order in which each technology loads on a webpage.



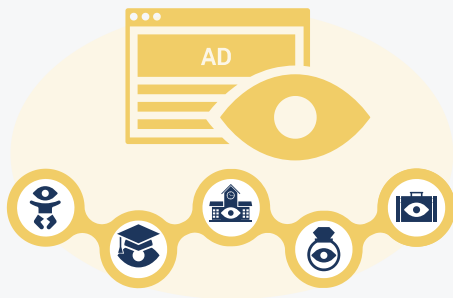
Supply Side Platforms and Exchanges



- Publishers use SSPs and ad exchanges to increase competition for their ad impressions. Increased bidding results in higher revenue for the publisher.
 - When selecting an SSP, publishers should choose a partner that will provide access to an ad exchange with a strong base of buyers for their ad inventory. To truly maximize the amount of competition, a publisher may opt to use multiple SSPs.
 - Selecting the best SSP, or combination of SSPs, will allow the publisher to focus on creating new content.
- Supply side platform (SSP): Software that allows publishers to offer their advertising inventory to many interested buyers all at once.
 - Ad exchange: A digital marketplace that allows for the buying and selling of advertising inventory, often executed through real-time auctions.

Demand Side Platforms

- A demand side platform (DSP) is an automated advertiser buying tool used to connect advertisers to inventory
- Inventory is made available to DSPs through a buy side tool called an SSP or exchange
- The core piece of a DSP is its bidder, which helps it make buying and pricing decisions
- A benefit of working with a DSP are its many integrations with inventory, data, and measurement providers
- Most DSPs are operated by buyers directly in a self-serve capacity



The Life of an Ad Impression

- When a user logs on to a website and is eligible to be shown an ad, the website passes the ad over to its ad server
- If a specific advertiser has not reserved this ad placement, the ad is sent off to a marketplace, such as an SSP or ad exchange
- In the marketplace, an auction takes place where bids are submitted to purchase the ad impression
- The highest bidder wins, the advertiser's ad is shown, and it all happens in less than 200 milliseconds

Targeting and Data

Targeting Overview

- There are two key types of targeting in digital advertising: contextual and user-based
- Contextual targeting forms an audience based on the type of content or topic on a webpage or app
- User targeting takes on many different forms:
 - Behavioral targeting uses digital behaviors to group consumers into audiences
 - Retargeting captures consumers who have already engaged with a brand directly
 - Lookalike modeling helps identify consumers who appear to be similar to an existing audience
 - Location targeting can be used to create audiences based on places people have visited in the real world



- Location targeting can be used to create audiences based on places people have visited in the real world
 - Offline targeting captures offline behaviors such as financial information and then translates it into audiences that can be reached digitally
 - Technographic data (or user agent data) provides information about the type of device someone is using, as well as specific details about the device itself
-
- Data that is collected about a user's journey is called observed data
 - When assumptions are made based on a user's behavior it's called inferred data
 - Data that a user proactively provides (by filling out a form or creating a profile) is called declared data



Data Relationships

- First-party data is data collected by and used by the same party
- Second-party data is data collected by one party and used by another
- Third-party data is made up of data points from different publishers, apps, and other partners, then bundled into segments and sold to third parties by data aggregators

Pixels and Cookies

- Pixels live on websites and fire when pages are loaded or specific actions are taken
- Cookies are small, temporary text files that live in your browser and are used to create a history of what you have done on the web for the sake of advertising or website personalization
- Cookies and pixels are specific to the browser-based web and do not live in apps or video players
- Safari currently blocks third-party cookies and other browsers are changing their cookie-tracking policies in an effort to improve consumer privacy



MAIDs

- MAIDs or mobile ad identifiers are alphanumeric strings used to identify individuals or devices in a privacy-safe way
- MAIDs are assigned to devices by the OS or operating system
- MAIDs are consistent across apps on a single device
- SDKs can be used to track MAIDs and in-app behaviors and activities
- Other connected devices, such as connected TVs and tablet, typically have device IDs that are used in the same way

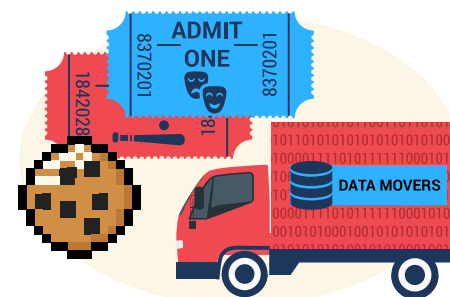


Online/Offline

- Many advertisers collect and store offline personally identifiable information (PII) about their customers to provide better services and account support, to maintain subscriptions, or for general record keeping
 - Advertisers store their PII or offline data in a CRM database
 - Online identifiers must be matched to offline identifiers to unlock an advertiser's ability to serve targeted digital ads to their offline customers, and vice versa
- Data onboarding is the process of matching offline identifiers to online identifiers for the purposes of advertising
 - Data onboarding enables advertisers to target, personalize, and measure advertising more holistically

DMPs

- DMPs can be used by both advertisers and publishers
- DMPs collect anonymized groups of data, as opposed to identifiable, user-level data
- DMPs primary responsibilities are to collect, store, manipulate, and move data on behalf of clients
- DMPs have integrations or connections with other tech platforms so they can move data more seamlessly
- DMPs enable the mixing and matching of all types of data through boolean logic to create audience segments



Buying Programmatically

The Auction

- Programmatic auctions take place in milliseconds, so there is time for an ad to be served on a loading webpage. Advertisers submit their max bids to participate in auctions
- A first-price auction is when the highest bidder wins, and they pay the amount they bid. A second-price auction is when the highest bidder wins, and they pay an increment above the second highest bid (typically 1 cent more)
- Search and programmatic advertising was founded on a second-price auction model
- Today, many programmatic auctions are run on a first-price auction basis
- Most ad auctions are run on a CPM basis, however some (like search) run on a CPC basis



Buy Side Optimization

- Advertisers can optimize campaigns by changing their budgeting and/or bidding strategy for websites, geographies, users, and more
- DSPs may optimize campaigns automatically using machine learning, but often need human intervention to improve performance further or help with secondary performance goals

Programmatic Transaction Types

- When people talk about programmatic advertising, they are typically referring to the open exchange
- The open exchange brings together buyers and sellers, and the advertiser willing to pay the most wins the ad impressions
- Programmatic deals are pre-defined programmatic agreements between buyers and sellers
- The three key types of programmatic deals are:
 - Private marketplaces
 - Preferred deals
 - Programmatic guaranteed
- Programmatic deals allow buyers to gain priority access or rates to publisher inventory
- Programmatic deals can be set up between advertisers and publishers, advertisers and SSPs, agencies and SSPs, agencies and publishers, or DSPs and SSPs



Identity Fundamentals

Identity Fundamentals Overview

- The concept of identity in the digital advertising space refers to having an understanding of the user and their journey
- Marketers need to identify:
 - A user's multiple devices
 - Multiple digital environments (such as browser and app) on the same device
 - Cookieless environments
 - A user's online/offline journey
- Without identity, marketers struggle to:
 - Capture enough scale of user data for targeting and measurement
 - Personalize ads regardless of environment
 - Measure advertising holistically
- Identity continues to evolve because of the rising importance of data privacy



Deterministic Identity

- Deterministic IDs are verified identifiers such as cookie IDs, mobile ad IDs, app IDs, and email addresses
- Deterministic identity solutions are highly accurate, but can be difficult to scale

Probabilistic Identity

- Probabilistic IDs use device and environment indicators such as IP address, timestamp, or unique site visits to link devices and digital identifiers
- The more data collected linking two devices or environments, the stronger the confidence that those two devices or environments belong to the same user profile
- Probabilistic IDs are used to help create device graphs by linking devices and environments to a unified user profile
- Unified user profiles allow advertisers to customize messaging and the user experience, manage ad frequency, and track conversions across different environments

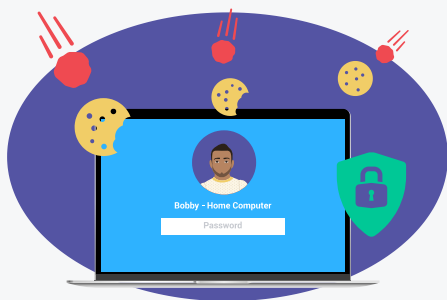
Device Graphs

- Once deterministic and probabilistic data is used to identify a user, a device graph syncs all of this data to as many of that user's IDs as possible
- The IDs that are tied to a specific user are typically cookie IDs, MAIDs, and IP addresses



Privacy and Cookieless Solutions

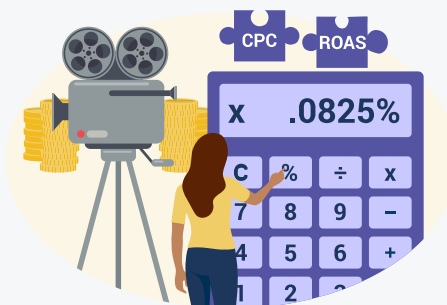
- Data privacy is leading to new regulations and the phasing out of identifiers like third-party cookies, device IDs, and IP addresses
- The industry is adapting to these shifts by building new, more privacy-centric identity solutions
- Two of these new identity frameworks include Unified ID 2.0, which requires users to login on websites across the Internet, and Google FLoC, which groups users together into interest-based cohorts based on which websites they visit



Digital Measurement

Measurement Fundamentals

- Within each part of the marketer's funnel (awareness, consideration, purchase, loyalty), there are different measurement approaches that are used to quantify success
- Pixels, cookies, and device IDs are the key technologies used to collect digital data



Media Metrics

- Advertisers access raw data from their digital campaigns, such as impressions, clicks, conversions, cost, and more
- Raw data is manipulated into various metrics that help give the advertiser a better picture of their campaign
- Metrics can be broken out into two main categories: cost metrics and performance metrics

Performance Measurement

- Attribution seeks to quantify the impact of specific, user-level media touch points on the path to conversion, whereas contribution seeks to broadly measure how different tactics work together to make an impact.
- Marketers will use both attribution and contribution together to make sure they are measuring from different angles, and can take a unified measurement approach.
- Within performance measurement, marketers can measure using a single-touch model or a multi-touch model, through incrementality testing, or through media mix modeling.



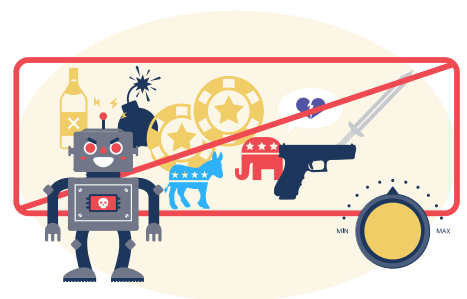
Brand Measurement

- Brand advertising is an advertising strategy used to establish connections with consumers emotionally and build strong, long-term relationships
- Brand advertising goals include:
 - Awareness: Increasing consumer recognition of the brand
 - Consideration: Inspiring consumers to learn more about the brand
 - Perception: Positive consumer opinion of the brand
 - Recall: Consumer recollection of brand
 - Affinity: Emotional connections forged between consumers and a brand
- Brand advertising is difficult to measure
- There are many different approaches to brand measurement, including:
 - Brand lift studies
 - Audience reach and frequency
 - Engagement
 - Unique site traffic
 - Social listening
 - Organic search lift
 - Viewability

Digital Advertising Risks

Digital Advertising Risks Overview

- Frequency management is a way for brands to control the number of times an individual sees their ads. Advertisers typically look for a sweet spot, aiming for a number of impressions that generates ad recall or brand recognition but does not hit the point of annoying their consumers.



- Brand safety is about upholding brand perceptions, primarily by managing the type of content that shows up alongside an ad.
- Viewability is a way for advertisers to measure whether or not their ads were possibly seen by a real human. Since people can move so quickly around the web, it's not uncommon for pages to close or scroll down before an ad actually loads in view.
- Fraud is the practice of falsifying ad delivery in an effort to steal advertising dollars. It is a common practice in the digital space and unfortunately costs advertisers billions of dollars per year globally.
- Advertisers can use a few different approaches to protect their brands, such as working with trusted partners, using campaign safeguards, and using brand safety tools