



POLITECNICO
DI MILANO



Digital attribution models

13th December 2022

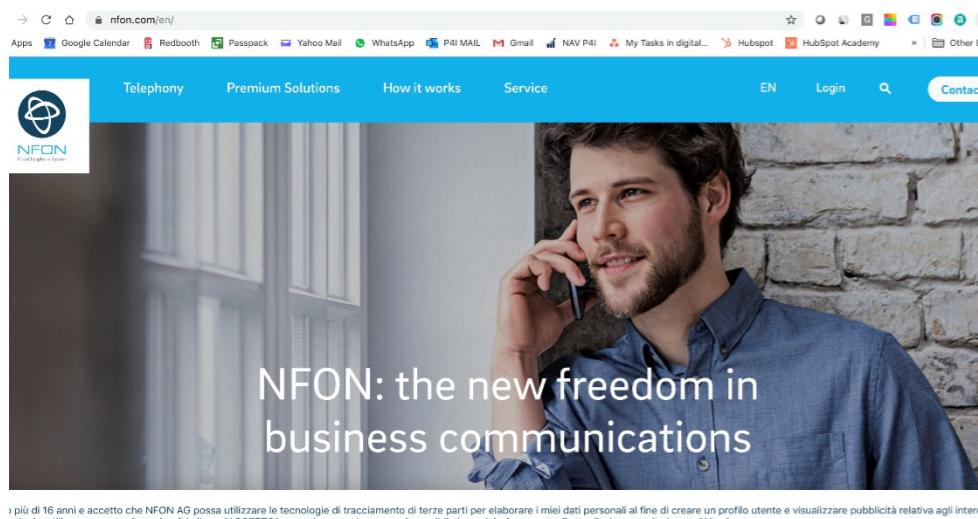
Prof. Alberto Cellini

An attribution model

An attribution model is the rule, or set of rules, that determines how credit for sales and conversions is assigned to touchpoints in conversion paths. ... In the tool, the calculated Conversion Value (and the number of conversions) for each of your marketing channels will vary according to the attribution model used.

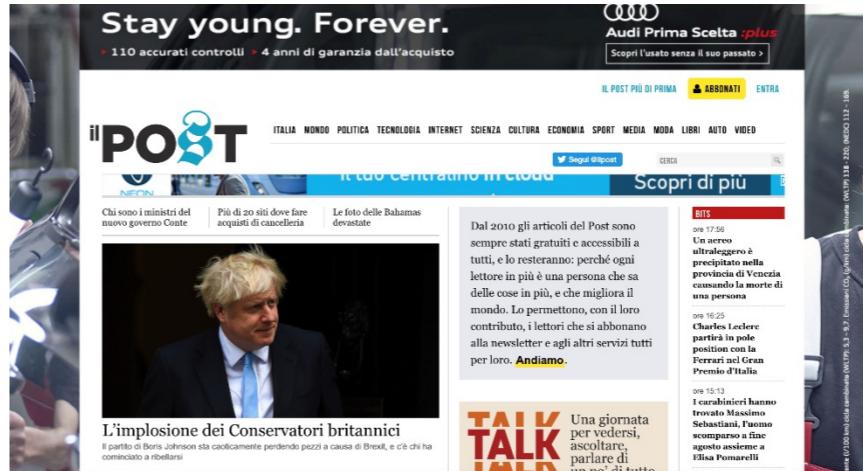
The Context 1: Remarketing

1. Visit www.nfon.com (a tech company)

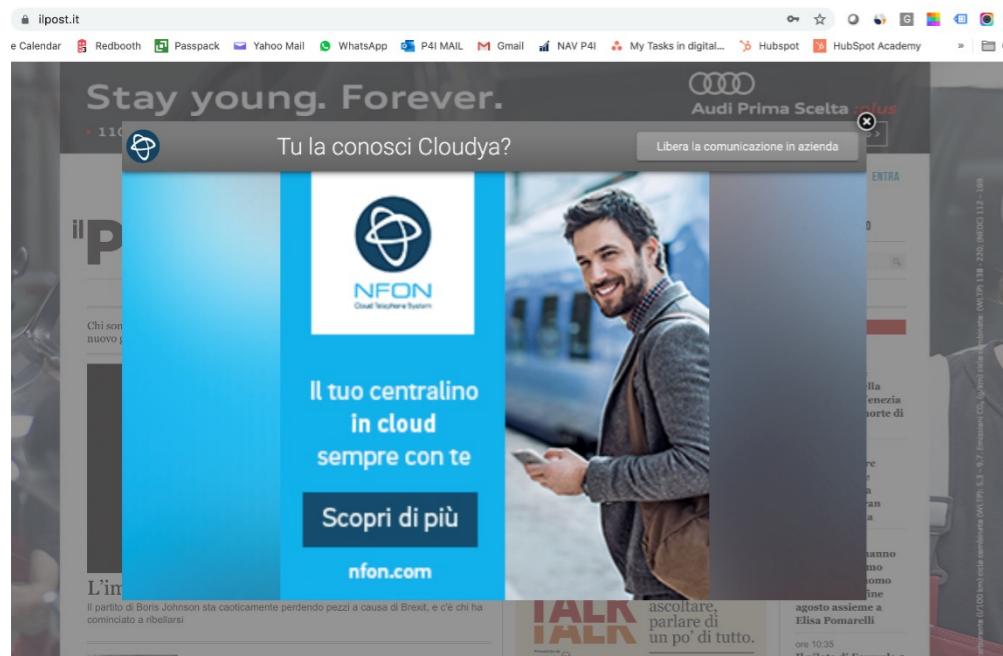


più di 16 anni e accetto che NFON AG possa utilizzare le tecnologie di tracciamento di terze parti per elaborare i miei dati personali al fine di creare un profilo utente e visualizzare pubblicità relativa agli interessi più utilizzati su questo sito web o fai clic su "ACCETTO". Accetti questo? È possibile in qualsiasi momento. Dettagli è immettendo sotto "Altro".

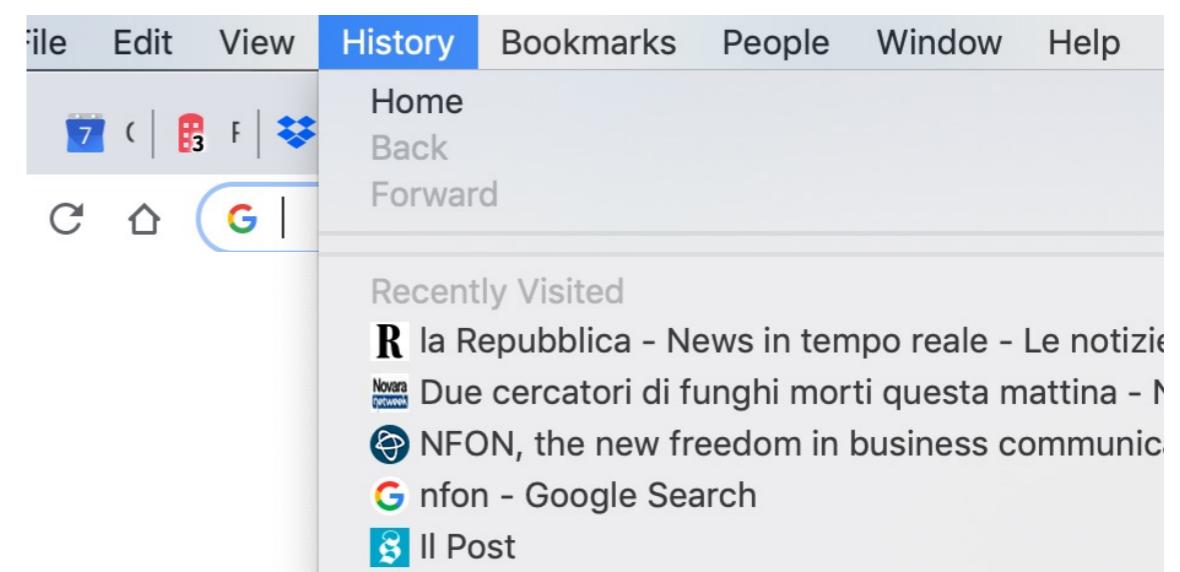
2. Jump to www.ilpost.it (an Italian blog)



3. NFON pop-up appears on Il Post page



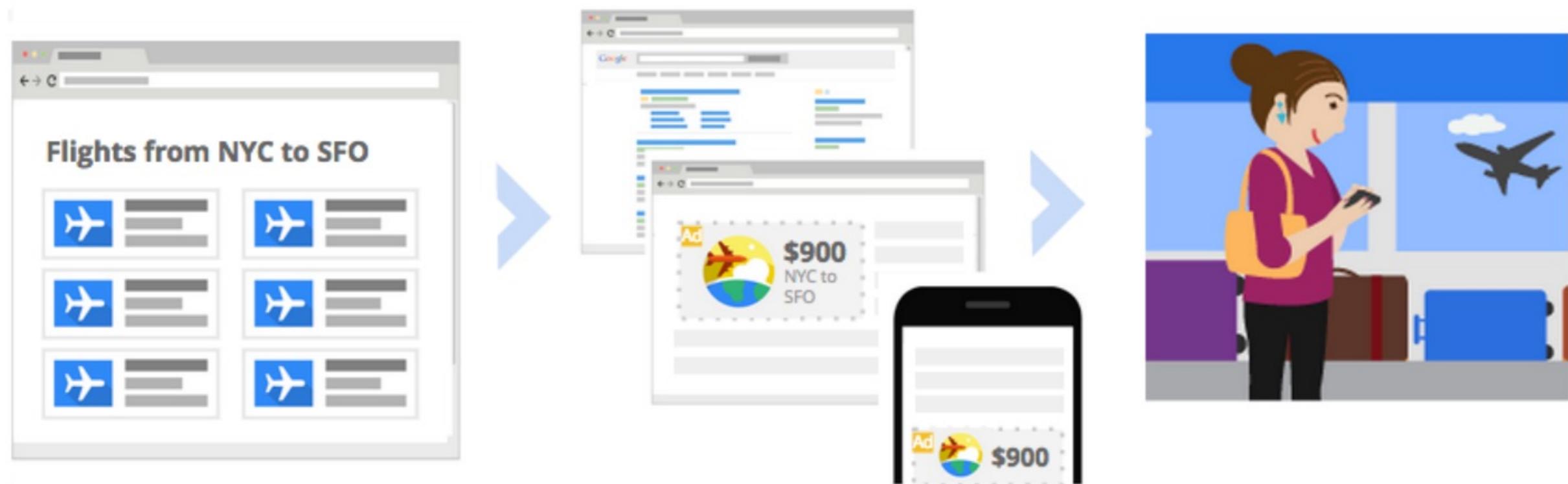
Check browser's History!



The Context 1: Remarketing Definition

Remarketing is a way to connect with people who previously interacted with your website or mobile app. It allows you to strategically position your ads in front of these audiences as they browse Google or its partner websites, thus helping you increase your brand awareness or remind those audiences to make a purchase.

(Google)



The Context 1: Remarketing Benefits

- **Prompt reach/Well-timed targeting:** You can show your ads to people who've previously interacted with your business right when they're searching elsewhere and are more likely to make a purchase. You can also help customers find you by showing them your ads when they are actively looking for your business on Google Search.
- **Focused advertising:** You can create remarketing lists to advertise for specific cases. For example, you may create a remarketing list targeted for people who added something to their shopping cart but didn't complete a transaction.
- **Large-scale reach:** You can reach people on your remarketing lists across their devices as they browse over 2 million websites and mobile apps.
- **Efficient pricing:** You can create high-performance remarketing campaigns with automated bidding. Real-time bidding calculates the optimal bid for the person viewing your ad, helping you win the ad auction with the best possible price. There's no extra cost to use Google's auction.
- **Easy ad creation:** Produce text, image, and video ads for free with Ad gallery. Combine a dynamic remarketing campaign with Ad gallery layouts to scale beautiful ads across all of your products or services.
- **Campaign statistics:** You'll have reports of how your campaigns are performing, where your ads are showing, and what price you're paying.

(Google)

Standard remarketing: Show ads to your past visitors as they browse sites and apps on the Display Network.

Dynamic remarketing: Boost your results with dynamic remarketing, which takes remarketing to the next level with ads that include products or services that people viewed on your website or app.

Remarketing lists for search ads: Show ads to your past visitors as they do follow-up searches for what they need on Google, after leaving your website.

Video remarketing: Show ads to people who have interacted with your videos or YouTube channel as they use YouTube and browse Display Network videos, websites, and apps.

Customer list remarketing: With Customer match, you can upload lists of contact information that your customers have given you. When those people are signed into Google, you can show them ads across different Google products.

(Google)

Organic

Sponsored

Google tennis racquet

Tutti Immagini Shopping Maps Notizie Altro Impostazioni Strumenti

Circa 25.700.000 risultati (0,67 secondi)

Tennis Racquets - Tennis Warehouse
www.tennis-warehouse.com/TennisRacquets.html ▾ Traduci questa pagina
SHOP: All Around · Traditional · Spin · Power · Best Sellers · Clearance Tennis Racquets · Modern · New. Tennis Racquet Brands. Babolat Racquets · Dunlop Racquets · Gamma Tennis Racquets · Head Racquets · Pacific Racquets · Prince Racquets · ProKennex Tennis Racquets · Tecnifibre Tennis Racquets · Volkl Tennis ...
Best Sellers · All Around · Spin · Power

Immagini relative a tennis racquet



→ Altre immagini per tennis racquet

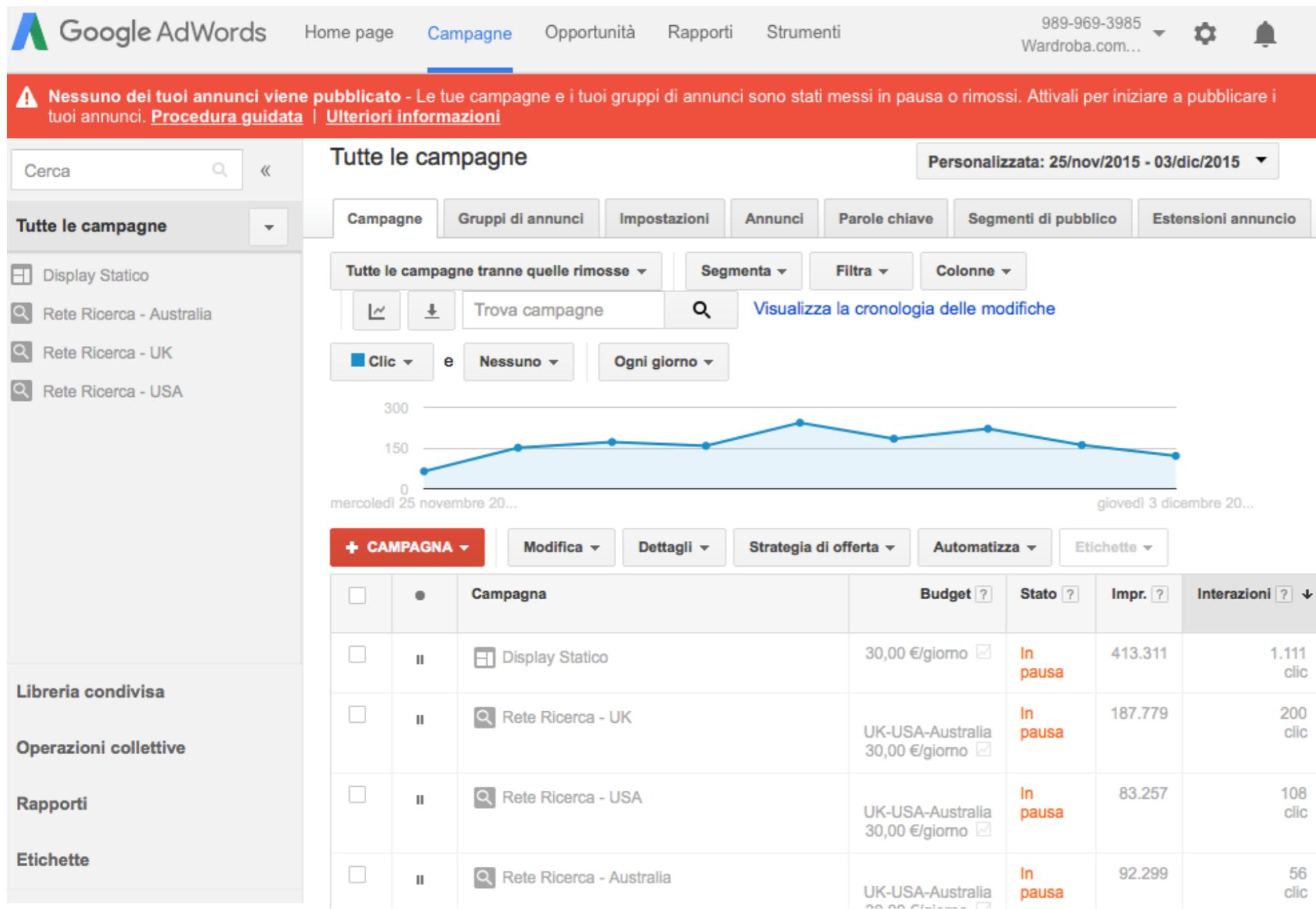
Segnala immagini non appropriate

Acquista tennis racquet Sponsorizzato ⓘ

 RACCHETTA BABOLAT PURE DRIVE WIMBLEDON (300 GR)
98,90 €
Tennispro.it
Spediz. gratuita
Da Google

 HEAD Ti. S6 Original Racchetta da Tennis, G1 = 4 1/8
84,99 €
Amazon.it
Spediz. gratuita
Da Google

Search & Display Ads: Auctions



The screenshot shows the Google AdWords interface. At the top, there's a red banner with a warning message: "Nessuno dei tuoi annunci viene pubblicato - Le tue campagne e i tuoi gruppi di annunci sono stati messi in pausa o rimossi. Attivali per iniziare a pubblicare i tuoi annunci. [Procedura guidata](#) | [Ulteriori informazioni](#)". Below the banner, the main navigation bar includes "Home page", "Campagne" (which is highlighted), "Opportunità", "Rapporti", and "Strumenti". The phone number "989-969-3985" and website "Wardroba.com..." are also at the top right.

The central area is titled "Tutte le campagne" (All campaigns) and shows a timeline from "mercoledì 25 novembre 2015" to "giovedì 3 dicembre 2015". A line graph tracks a metric over time, starting around 100 and ending near 140. Below the graph, there are filters for "Clic", "e", "Nessuno", and "Ogni giorno".

The main content area displays a table of campaigns:

	Campagna	Budget	Stato	Impr.	Interazioni
<input type="checkbox"/>	Display Statico	30,00 €/giorno	In pausa	413.311	1.111 clic
<input type="checkbox"/>	Rete Ricerca - UK	UK-USA-Australia 30,00 €/giorno	In pausa	187.779	200 clic
<input type="checkbox"/>	Rete Ricerca - USA	UK-USA-Australia 30,00 €/giorno	In pausa	83.257	108 clic
<input type="checkbox"/>	Rete Ricerca - Australia	UK-USA-Australia 30,00 €/giorno	In pausa	92.299	56 clic

On the left sidebar, there are links for "Libreria condivisa", "Operazioni collettive", "Rapporti", and "Etichette".

Programmatic Ads

Programmatic gives advertisers the ability to target users with relevant content based on user data and to buy one impression at a time to increase efficiency and effectiveness of the buy, all without the cost incurred by manual human tasks.

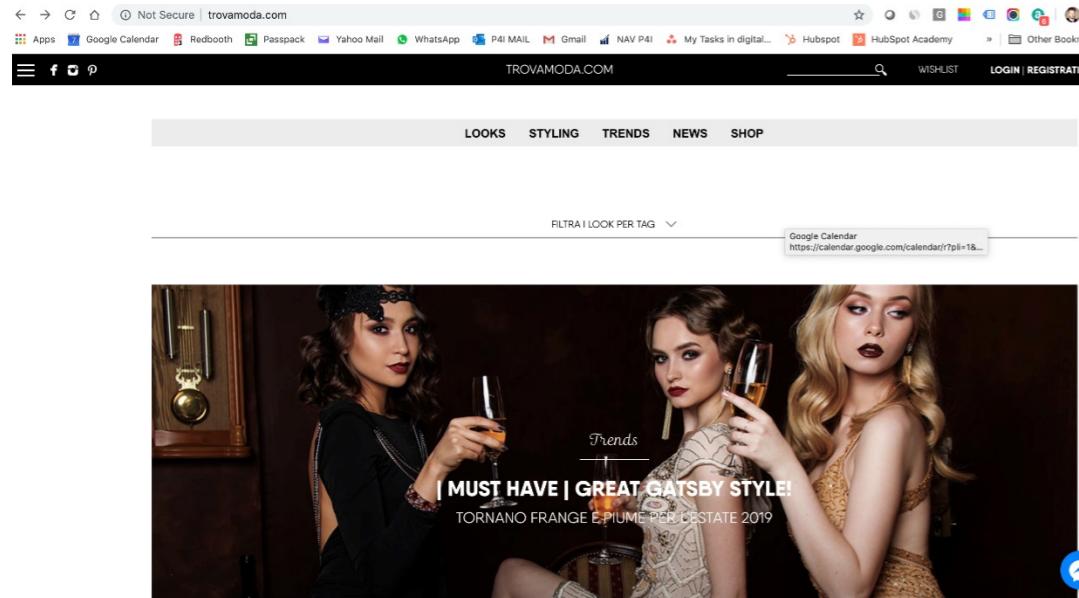
The point is that humans cannot possibly work as fast as computers can at analyzing data, optimizing ads, matching user information, and making decisions based on all the information collected in a few milliseconds, which is how quickly real-time bidding and buying takes place.

Real Time Bidding

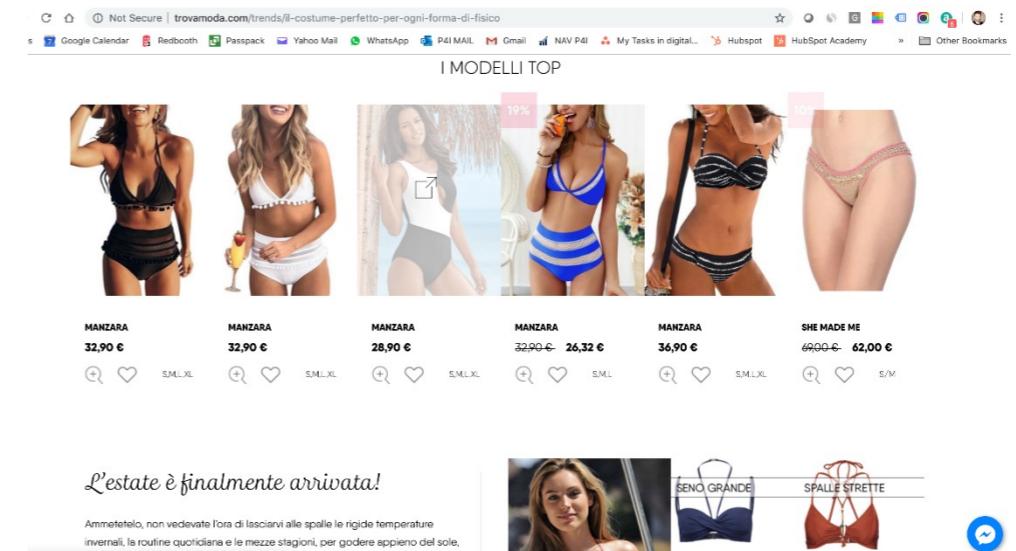
- The buying and selling of ad impressions through ad exchanges and platforms.
- Price is determined by immediate demand.
- Real-time bidding works within milliseconds: a person visits a website and their information is given to an ad exchange where an auction for that impression occurs.

The Context 3: Affiliate Marketing

1. Visit trovamoda.com (an online fashion store)



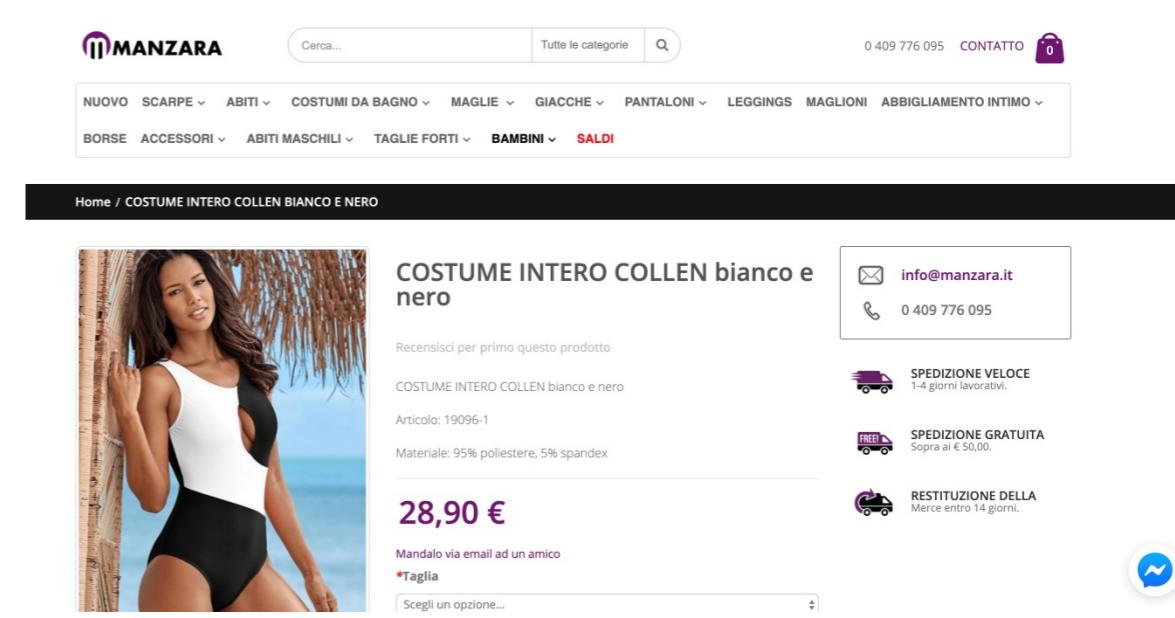
2. Click on a desidered product



3. You are redirected to the original store



4. Checkout on original store



The Context 3: Affiliate Marketing

... and I am immediately showed Manzanara banner on www.repubblica.it



The screenshot shows the homepage of www.repubblica.it. At the top, there's a navigation bar with links to various services like Google Calendar, Redbooth, Passpack, Yahoo Mail, WhatsApp, P4I MAIL, Gmail, NAV P4I, My Tasks in digital..., Hubspot, and HubSpot Academy. Below the navigation is the main header "la Repubblica" with a menu icon and a search bar.

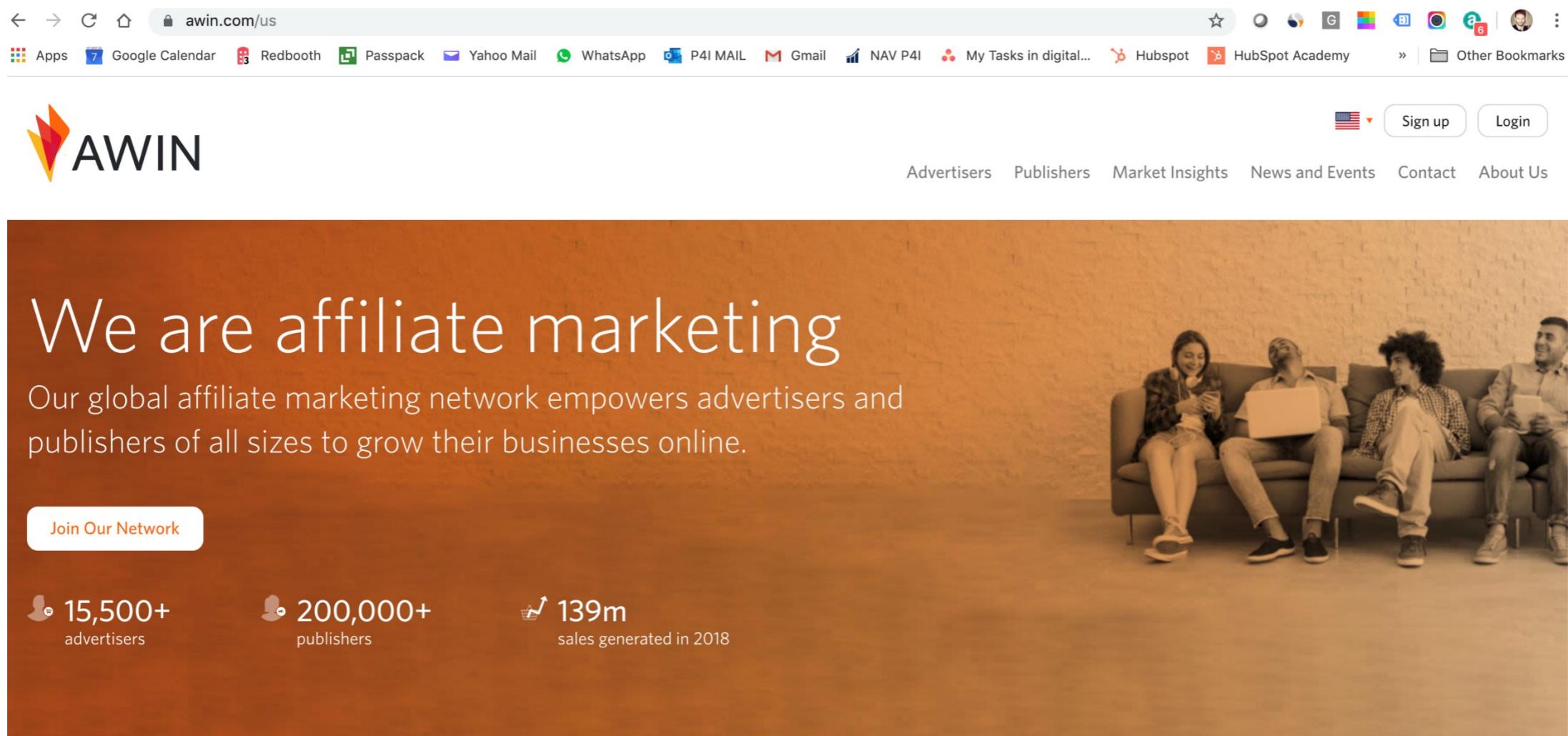
The main article headline is "Parigi tende una mano sull'immigrazione". It includes a photo of two men shaking hands (one in a suit, one in a white jacket) and a short summary. Below the article, there's a section with a photo of a man speaking and some text from other sources.

In the sidebar, there's a banner for "Il cuore Rosso Ferrari spera: segu il Gp d'Italia [in diretta](#)". This is followed by a snippet of text about Formula 1 racing.

At the bottom right, there's a prominent advertisement for "MANZARA" featuring two women in swimwear. The ad includes a discount of "-18%" and prices of 28,90 € and 26,90 €.

The Context 3: Affiliate Marketing

Zanox (now Awin: <https://www.awin.com/us>) is an Affiliate Marketing Platform. A platform where offers and demand can meet, where publishers interact with advertisers



The screenshot shows the Awin website homepage. At the top, there is a navigation bar with links to various services like Apps, Google Calendar, Redbooth, Passpack, Yahoo Mail, WhatsApp, P4I MAIL, Gmail, NAV P4I, My Tasks in digital..., Hubspot, HubSpot Academy, and Other Bookmarks. Below the navigation bar is the Awin logo (a stylized orange flame icon followed by the word "AWIN"). To the right of the logo are links for Advertisers, Publishers, Market Insights, News and Events, Contact, and About Us. There is also a dropdown menu for the United States and buttons for Sign up and Login. The main content area features a large orange background image of four people sitting on a couch, looking at devices. The text "We are affiliate marketing" is prominently displayed in white. Below it, a subtext reads: "Our global affiliate marketing network empowers advertisers and publishers of all sizes to grow their businesses online." A "Join Our Network" button is visible. At the bottom, there are three statistics: "15,500+ advertisers", "200,000+ publishers", and "139m sales generated in 2018".

Solutions for advertisers

Solutions for publishers

The online advertising model could be based on:

- ppv (pay-per-view)
- ppc (pay-per-click)
- ppa (pay-per-activity).

PPV: the publisher is compensated on the basis of the number of views of the pages where the banner is published

PPC: the publisher is compensated on the basis of the number of clicks on the banner (and thus original website visit in theory)

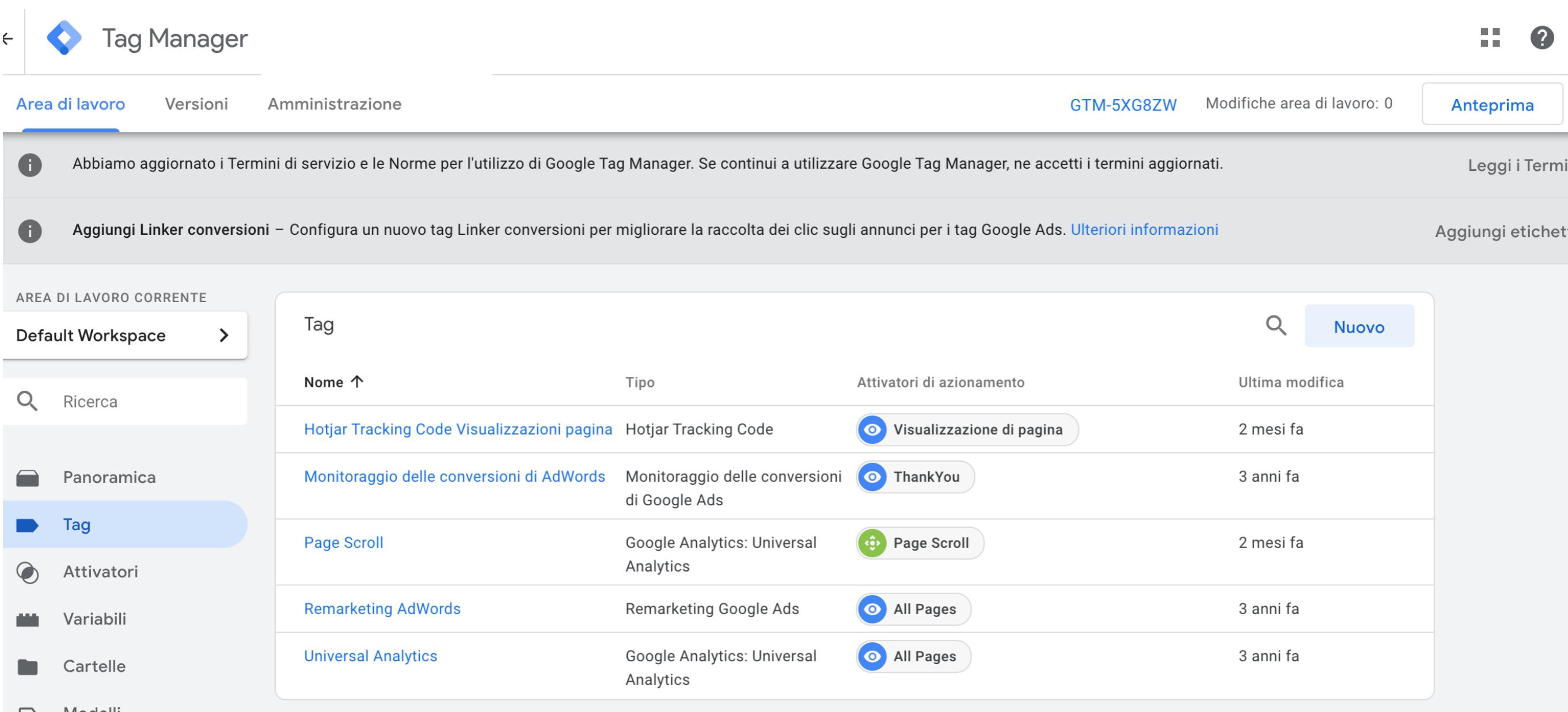
PPA: the publisher is compensated with a percentage of sales generated by customers who clicked on the banner.

With PPC and PPV (originally the first method to compensate publishers, more recently very rare and uncommon) some problems arise:

- How can you track(as Advertiser) from which publisher your visit come from?
- How can you track (as Publisher) which of the clicks on published banner have generated a sale?
- What happens if the user, before buying on original website have clicked on banners published on more than a website?

Pixel or Cookies: Google Tag Manager

Through Tag Manager, digital website can manage all the types of cookies, those used to tracking performances (Google Analytics), behaviors (Hotjar), profiling users (retargeting), affiliation programs, etc.



The screenshot shows the Google Tag Manager interface. The top navigation bar includes 'Tag Manager' (with a blue diamond icon), a back arrow, a grid icon, and a help icon. Below the bar, tabs for 'Area di lavoro' (selected), 'Versioni', and 'Amministrazione' are visible, along with a workspace ID 'GTM-5XG8ZW', modification count 'Modifiche area di lavoro: 0', and an 'Anteprima' button. A sidebar on the left lists navigation items: 'Default Workspace' (selected), 'Ricerca', 'Panoramica', 'Tag' (highlighted with a blue oval), 'Attivatori', 'Variabili', 'Cartelle', and 'Modelli'. The main content area is titled 'AREA DI LAVORO CORRENTE' and shows a table of 'Tag'. The table columns are 'Nome ↑', 'Tipo', 'Attivatori di azionamento', and 'Ultima modifica'. The data rows are:

Nome ↑	Tipo	Attivatori di azionamento	Ultima modifica
Hotjar Tracking Code Visualizzazioni pagina	Hotjar Tracking Code	Visualizzazione di pagina	2 mesi fa
Monitoraggio delle conversioni di AdWords	Monitoraggio delle conversioni di Google Ads	ThankYou	3 anni fa
Page Scroll	Google Analytics: Universal Analytics	Page Scroll	2 mesi fa
Remarketing AdWords	Remarketing Google Ads	All Pages	3 anni fa
Universal Analytics	Google Analytics: Universal Analytics	All Pages	3 anni fa

Example of Tracking Pixel

Cookie: a piece of code to track users' activities

ADMIN USER

Property [+ Create Property](#)
Federico Della Bella Engineering

[⬅](#) [Property Settings](#)
[User Management](#)
.js [Tracking Info](#)
[Tracking Code](#) [Data Collection](#) [User-ID](#) [Session Settings](#) [Organic Search Sources](#) [Referral Exclusion List](#) [Search Term Exclusion List](#)

[PRODUCT LINKING](#)
[Adwords Linking](#)
[AdSense Linking](#)
[Ad Exchange Linking](#)
[All Products](#)

Tracking ID UA-76426414-1 **Status** Receiving traffic in past 48 hours.
0 active users right now. See details in [real-time traffic reports](#).
[Send test traffic](#) [?](#)

Website Tracking

Global Site Tag (gtag.js)

This is the Global Site Tag (gtag.js) tracking code for this property. Copy and paste this code as the first item into the <HEAD> of every webpage you want to track. If you already have a Global Site Tag on your page, simply add the **config** line from the snippet below to your existing Global Site Tag.

```
<!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?id=UA-76426414-1"></script>
<script>
  window.dataLayer = window.dataLayer || [];
  function gtag(){dataLayer.push(arguments);}
  gtag('js', new Date());

  gtag('config', 'UA-76426414-1');
</script>
```

The Global Site Tag provides streamlined tagging across Google's site measurement, conversion tracking, and remarketing products – giving you better control while making implementation easier. By using gtag.js, you will be able to benefit from the latest dynamic features and integrations as they become available. [Learn more](#)

Cookie: a piece of code to track users' activities

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Privacy

Cookie policy

Thu 24 May 2018 13.40 BST



841

Contents

- [1. What is a cookie?](#)
- [2. How do we use cookies?](#)
- [3. What types of cookies do we use ?](#)
- [4. How do we use cookies for advertising?](#)
- [5. How to manage advertising cookies](#)
- [6. Useful links](#)
- [7. More people in Italy...](#)

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What is a cookie?

A cookie is a small file that can be placed on your device that allows us to recognise and remember you. It is sent to your browser and stored on your computer's hard drive or tablet or mobile device. When you visit our sites, we may collect information from you automatically through cookies or similar technology.

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[Amber Rudd quits cabinet and attacks PM for 'political vandalism'](#)

<https://www.theguardian.com/info/cookies>

An **attribution model** tells your analytics program how you want to weigh the importance of different touchpoints.

For example, if you want every single page to be given equal weight (or credit) for the conversion, you will choose a **Linear Model**. If you want only the first page a visitor ever saw before they ultimately converted, you would choose a **First Interaction** (or First Touch) model.

The attribution models define a **set of deterministic rules or a statistical algorithm** on the basis of which the results deriving from a certain action performed by the consumer are attributed (eg purchase, appointment request, test drive reservation, etc.) to the **different touchpoints**, digital and / or physical, which contributed to the implementation of the action itself, identified as the objective of a campaign.

Attribution models can be classified according to two variables.

1. The type of model used to attribute the conversion:

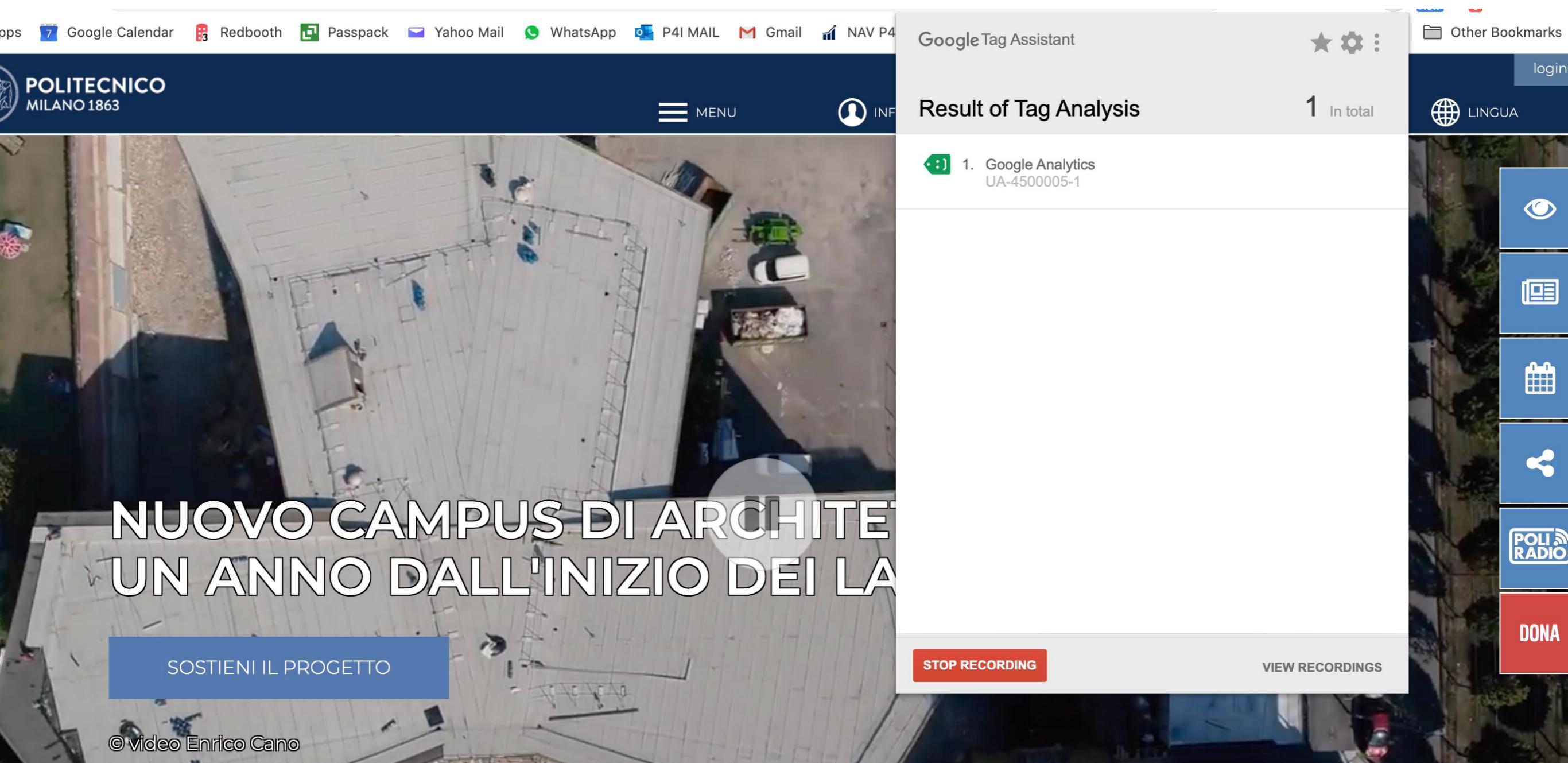
- Rule Based Model, for which the attribution of each touchpoint to the conversion is based on rules defined a priori
- Algorithmic-Probabilistic Model, for which the attribution of what each touchpoint has contributed to the conversion is based on an algorithmic-probabilistic model of analysis of the consumer's past behavior.

2. The number of touchpoints considered in the attribution: there are in fact models that attribute the merit to a single touchpoint within the conversion path and others that instead attribute the merit to several touchpoints

Some ruled-based attribution models

- **Last-click attribution:** 100% to the last visited website
- **First-click attribution:** 100% to the first visited website
- **First-and-last-click attribution:** 50% to both first and last visited websites in the funnel
- **Simple decay attribution:** weighted percentage of the credit to the most recent touchpoint
- **Linear attribution:** every touchpoint receive an equal credit

How to detect the presence of cookies with Google Tag Assistant



The screenshot shows a website for the Politecnico di Milano featuring a video player and a Google Tag Assistant analysis tool.

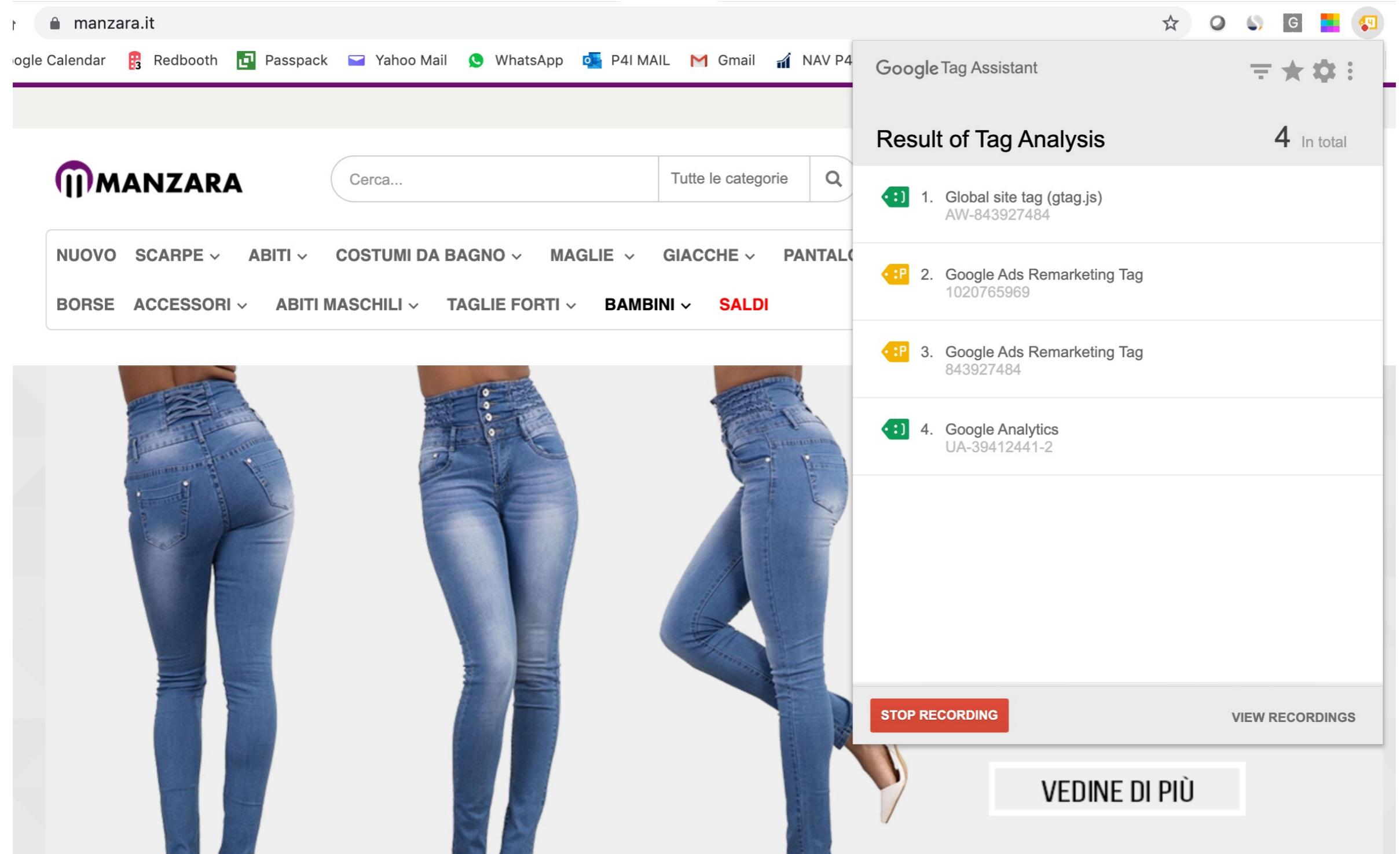
Website Header: The header includes the Politecnico di Milano logo and the text "POLITECNICO MILANO 1863". It also features a menu icon, user profile, and language selection ("LINGUA").

Google Tag Assistant Analysis: The right side of the screen displays the "Result of Tag Analysis" from Google Tag Assistant. It shows one tag found: "1. Google Analytics UA-4500005-1".

Video Player: The main content area contains a video player with a circular overlay containing the text "NUOVO CAMPUS DI ARCHITETTURA UN ANNO DALL'INIZIO DEI LAVORI". Below the video is a blue button labeled "SOSTIENI IL PROGETTO". The video source is credited to "© video Enrico Cano".

Control Buttons: At the bottom of the video player are "STOP RECORDING" and "VIEW RECORDINGS" buttons.

How to detect the presence of cookies with Google Tag Assistant



The screenshot shows a web browser window with the URL manzara.it. The browser toolbar includes links to Google Calendar, Redbooth, Passpack, Yahoo Mail, WhatsApp, P4I MAIL, Gmail, and NAV P4. A Google Tag Assistant extension is active, displaying a sidebar titled "Result of Tag Analysis" which lists four tags:

- 1. Global site tag (gtag.js)
AW-843927484
- 2. Google Ads Remarketing Tag
1020765969
- 3. Google Ads Remarketing Tag
843927484
- 4. Google Analytics
UA-39412441-2

The main content area of the browser displays the homepage of the **MANZARA** website, featuring a search bar, category navigation (NUOVO, SCARPE, ABITI, COSTUMI DA BAGNO, MAGLIE, GIACCHE, PANTALONI, BORSE, ACCESSORI, ABITI MASCHILI, TAGLIE FORTI, BAMBINI, SALDI), and a product image of three pairs of blue jeans.