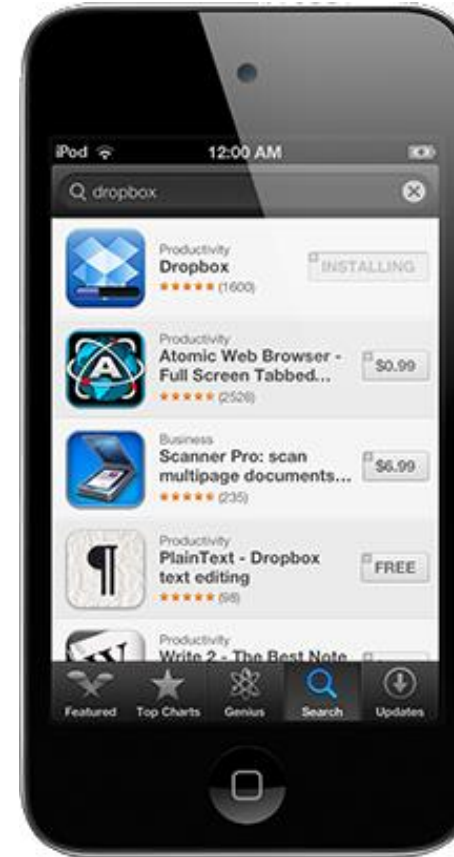


#07. Mobile, places, apps



University of Bergamo
Master Course in Project and
Management of Tourism Systems
Academic Year 2021-2022
IT for Tourism Services



What are we talking about this time?



1. Mobile
2. Different needs
3. Mobile-friendliness
4. Georeference & geolocation
5. Location-Based Services
6. Wi-Fi
7. Apps vs. websites

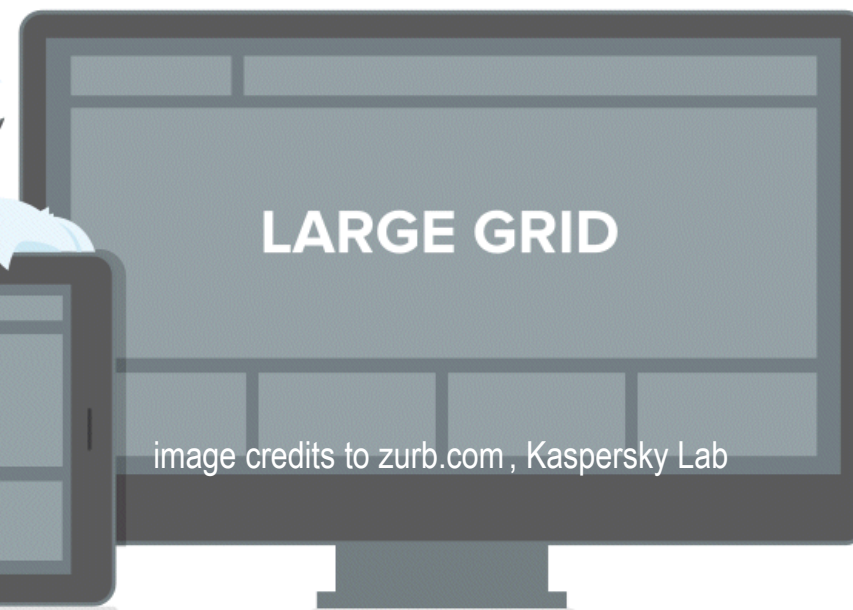
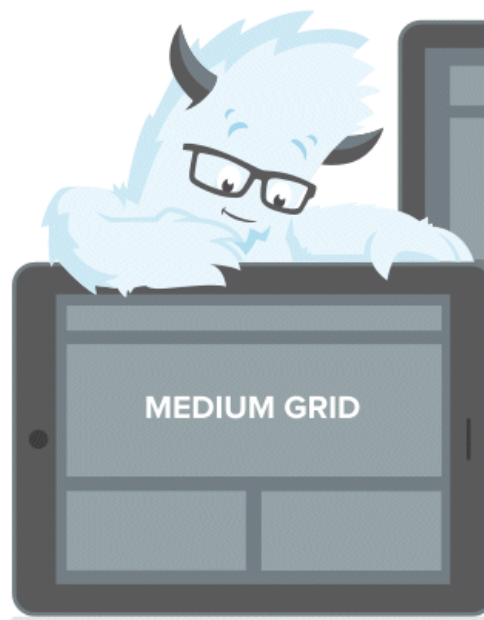
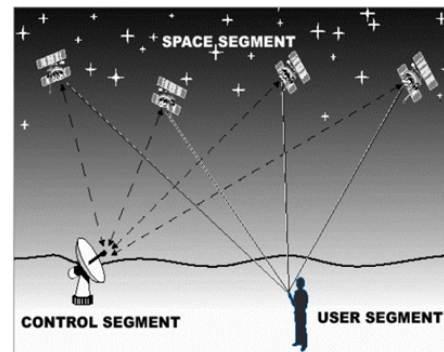
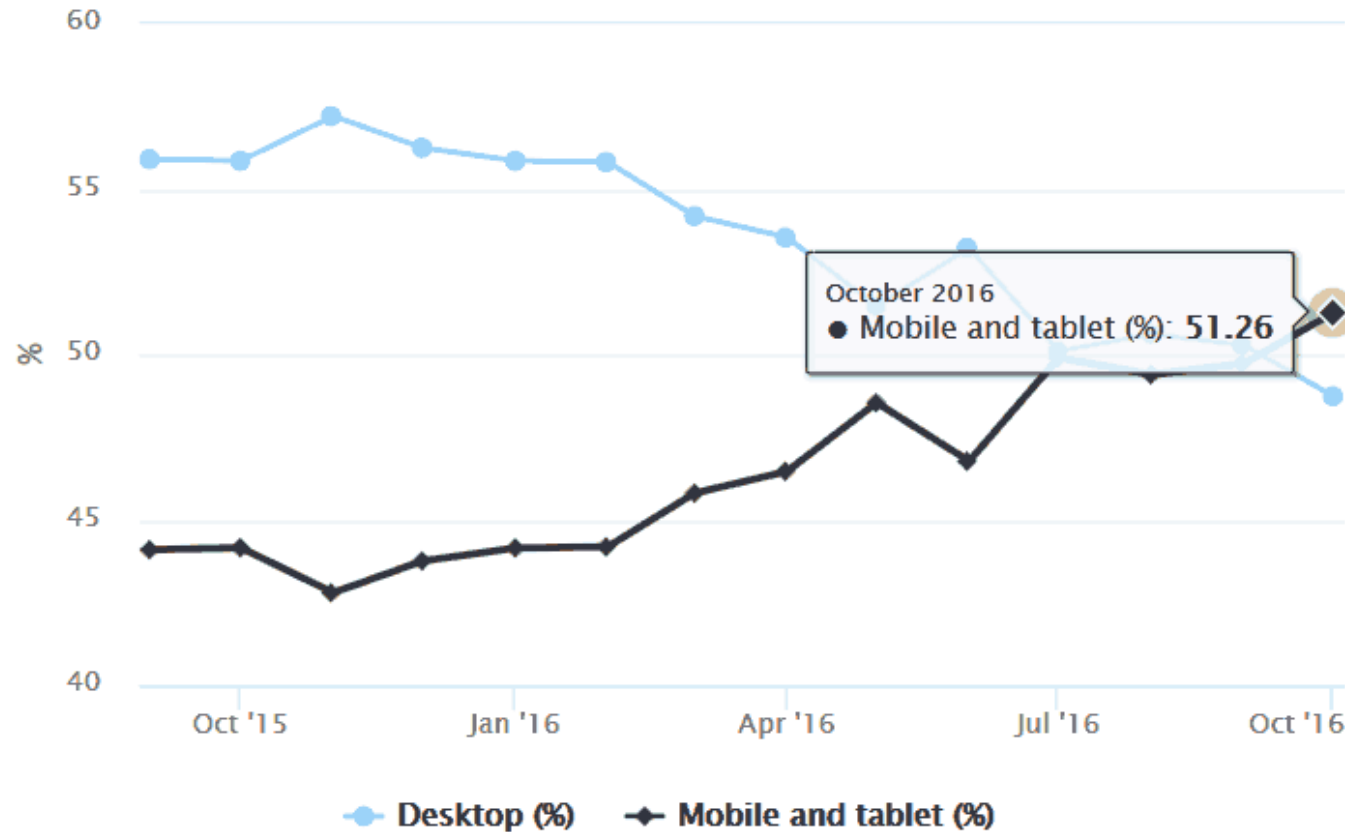


image credits to zurb.com , Kaspersky Lab

Mobile has overcome desktop



Mobile v desktop



Highcharts.com

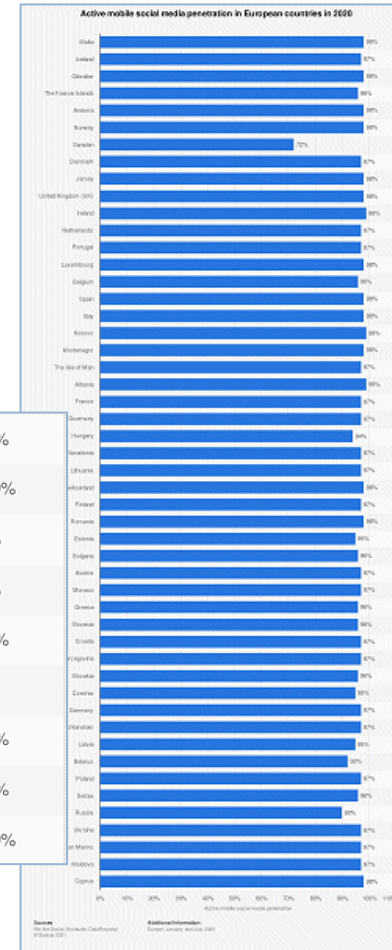
Source:
ComScore
2014

Source:
The Telegraph
November 11, 2016

Social networks in mobility



Considering the first two of the four recent **developments** in e-Tourism – **sociality** and communication **on the move** – it can be verified that in Europe, for example, the penetration of the use of social networks in mobility **exceeds 90%**.



Source: Statista 2021 image credit to icons-for-free

Our average customers?

Destination
around me
Splaiul Bahlui Mal Stang, Iasi

- Destination
- Travel
- Emergency

Bag

Phone

Shoes

image credit to oneindia.com

Different needs



Talking about tourism and mobility, let's see now whether **tourists' needs** are expressed and addressed via a desktop computer, **at home or in a office**, or through a mobile device, i.e. **on-the-move**.



Information search

- ✓ on destinations
- ✓ on accommodation
- ✓ on tours or routes
- ✓ on airlines, railways, car rental
- ✓ on packaged tours



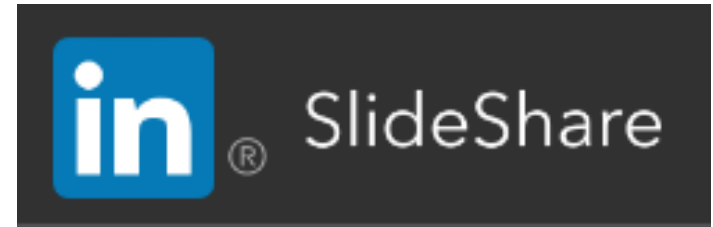
From home, or office,
before leaving

Foreseeing

- ✓ through pictures
- ✓ through videos
- ✓ through presentations
- ✓ through virtual reality



image credit to [Business in Vancouver](#)



From home, or office,
before leaving

Customization

- ✓ segmentation
- ✓ down to the single tourist
- ✓ privacy – as we will see – is disappearing



image credit to [Push Monkey Blog](#)

image credit to דרכון פורטוגלי



From home, or office,
before leaving

Information comparison



- ✓ User Generated Content
- ✓ Photo sharing
- ✓ Video sharing



From home, or office,
before leaving

Purchase of products

or e-commerce

- ✓ from Travel Providers
- ✓ through Online Travel Agents (OTA)
- ✓ directly from destinations
- ✓ from specialized publishers



Touring Club Italiano



From home, or office,
before leaving

Purchase of personal services

- ✓ local guides
- ✓ guided tours
- ✓ local courses
(cuisine, arts & crafts etc.)



CONTINENTAL <ol style="list-style-type: none">1. Baked Spinach Souffle2. Assorted Veg. Au gratin3. Baked Veg. in Mariuara Sauce4. Shepherd's Pie5. Spicy Baked Pan Cake Rolls6. Cannelloni7. Snow Ball Pudding 
SALADS <ol style="list-style-type: none">1. Hawaiian Salad2. Cheese & Macaroni Salad3. Fruits with Orange Cream Dressing4. Potato Salad Loaf5. Sunshine Salad6. Russian Salad7. Coleslaw Salad8. Mexican Bean and Corn Salad9. Ceaser Salad10. Slimmer Salad 



image credit to [QuébecOriginal](#)
image credit to [Press Release Jet](#)
image credit to [perfectcookery.in](#)

From home, or office, before leaving



On-the-move

Now, let's take into consideration which **tourist needs** are expressed by **mobile users**.



image credit to oneindia.com



On-the-move, while travelling

Local information



“What can I do?”

“Will that venue still be open?”

“What is this building?”

... through Augmented Reality (AR), too



image credits to brettfish.co.za, giphy

On-the-move, while travelling

Advice

“Any good place to have a meal?”

“Any free toilets in the area?”

“Any affordable activities?”



image credits to [map icons collection](#)



On-the-move, while travelling

Geographical positioning



“Where am I?”

“Which way to the main square?”

“Which way to my B&B?”



Image credit to EduVision

here



On-the-move,
while travelling

Information on public transport

“Which tramway line shall I take? And where from?”

“Shall I purchase tickets in advance?”

“It's late... Will the tramway still be running?”



On-the-move,
while travelling

Reassurance

“Is it going to rain?”

“Will I find a parking place for my car? Where?”

And how much will they charge me?”

“Is this a dangerous area?”



image credit to Zero Grid

On-the-move,
while travelling

Communication



“I need to place a phone call!”

“I need to send a short message!”

“I wish I could visit that webpage...”

To: Ricky

Ricky, are you free this afternoon? If you are, would you join me to the mall? We could do window shopping. How does it sound?

From: Dennise

image credits to proprofs.com



On-the-move,
while travelling

Mobile-friendliness



A crucial usability problem for smartphones is the websites' ability to be fully readable on very small monitors.

Touchscreen, and fingers' size, is the default on smartphones...

There's a Google Tool which tests mobile compliance, aka mobile-friendliness.

Mobile-Friendly Test

http://kiwimilano.it/dct

No loading issues VIEW DETAILS

Tested on: 28 Aug 2018 at 09:33

Page is mobile friendly

This page is easy to use on a mobile device

Additional resources

- Open site-wide mobile usability report
- Find out more about mobile-friendly pages
- Post comments or questions to our discussion group

SCREENSHOT SOURCE CODE

UniBg IT for Tourism Services 2018-2019

Yes!

These are the "Online materials made available by the lecturer" mentioned in the UniBg 2018-2019 Programme for the Lectures (coded 44141-MOD2) on IT for Tourism Services.

These materials are a work in progress.

Presentations of the lectures are published on SlideShare - and pdf files made downloadable - on the day after each lecture.

Strange layout?

Cookies help us deliver our services. By using our services, you agree to our use of cookies.

[Our Privacy Policy](#)

Ok

Privacy Terms

Mobile-friendliness checked



The Google Mobile-Friendly tool tests mobile **compliance** by referring to the **source code** of the relevant webpage. At least **two approaches** are available to solve the mobile-friendliness problem.

Mobile-friendly websites may be either **responsive** or **adaptive**.

Mobile-Friendly Test

http://kiwimilano.it/dct

No loading issues VIEW DETAILS

Tested on: 28 Aug 2018 at 09:33

Page is mobile friendly

This page is easy to use on a mobile device

Additional resources

- Open site-wide mobile usability report
- Find out more about mobile-friendly pages
- Post comments or questions to our discussion group

Privacy Terms

```
1 <!DOCTYPE html>
2 <!-- [if IE 8] <html class="no-js lt-ie9" lang="en"
3 <html class="no-js" lang="en"
4 <!-- <![endif]--><html class=" js touch svg inlinesvg
5 <meta name="viewport" content="width=device-width" />
6
7 <!-- InstanceBeginEditable name="doctitle" -->
8 <title>IT for Tourism Services, UniBg 2018-2019: Online
9 <!-- InstanceEndEditable -->
10 <link rel="stylesheet" href=".. /Style/Foundation
11 /css/normalize.css" />
12 <link rel="stylesheet" href=".. /Style/Foundation
13 /css/foundation17.css" />
14 <link rel="stylesheet" href=".. /style/Foundation/stylesheets
15 /general_foundicons.css" type="text/css" />
16 <link rel="stylesheet" href=".. /Style/ciao2013.css" />
17 <link href="https://fonts.googleapis.com/css?family=Lato"
18 rel="stylesheet" type="text/css" />
19 <!-- InstanceBeginEditable name="description" -->
20 <meta name="Description" content="IT for Tourism Services,
21 UniBg 2018-2019: Online materials made available by the
22 lecturer" />
23 <!-- InstanceEndEditable -->
24 <meta name="copyright" content="copyright © 2008-2018 Roberto
25 Peretta: roberto.peretta@kiwimilano.it" />
26 <meta name="editor" content="Zurb Foundation 5" />
27 <meta name="formatter" content="Adobe Dreamweaver CS4" />
28 <meta name="author" content="Roberto Peretta:
29 roberto.peretta@kiwimilano.it" />
30 <link rel="icon" href="https://kiwimilano.it/favicon.ic
31 <script async=" src="//www.google-analytics.com
32 /analytics.js"></script><script src=".. /Style/Foundation
33 /js/vendor/custom.modernizr.js"></script>
```

Responsive websites



Currently, the most popular solution is **the responsive approach**. Specific programming languages, like CSS and Javascript, are used in the source. **The same HTML source** is used by **all devices** – from desktop through tablets to smartphones – for its ability to adjust to monitors of any size.

By the way, **CSS** (Cascading Style Sheets) provides graphic style instructions, while **Javascript** is a high-level programming language.

Alongside CSS and HTML, JavaScript is now a core technology of the World Wide Web.



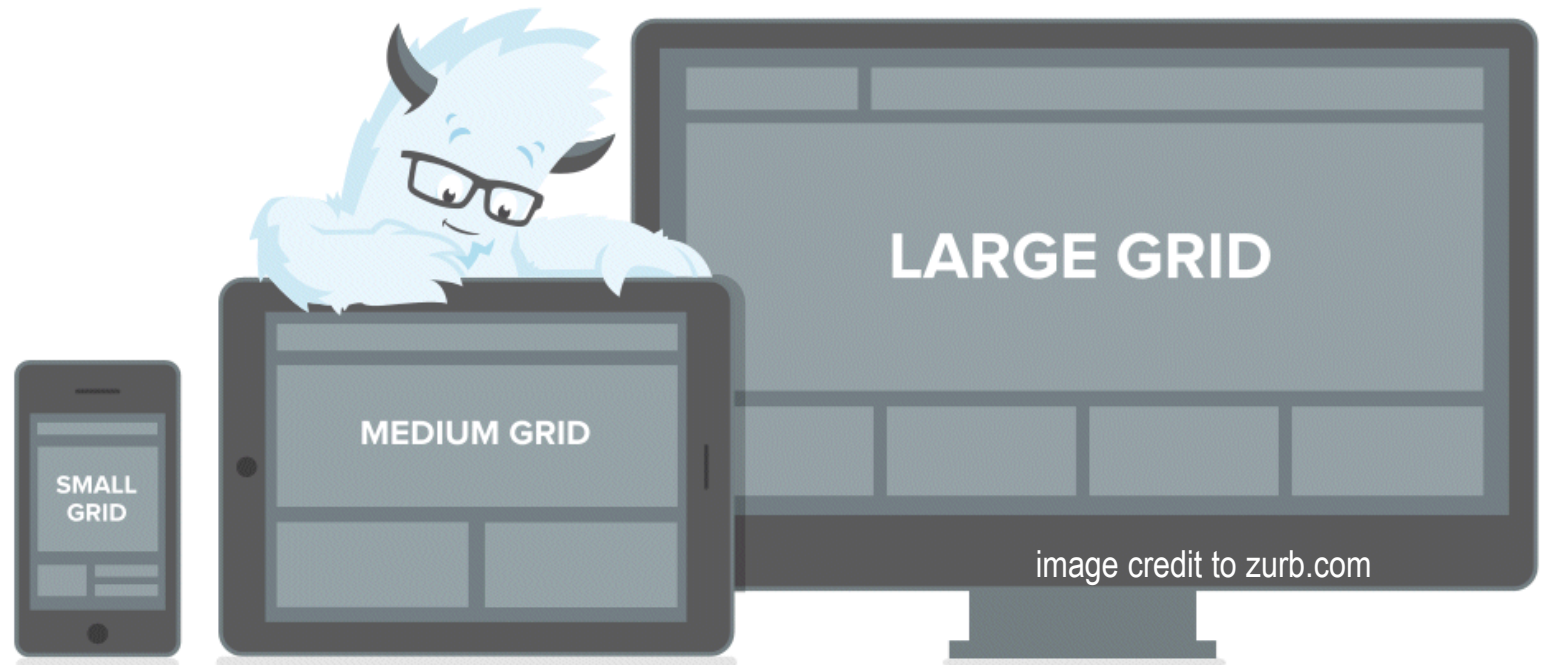
Adaptive websites



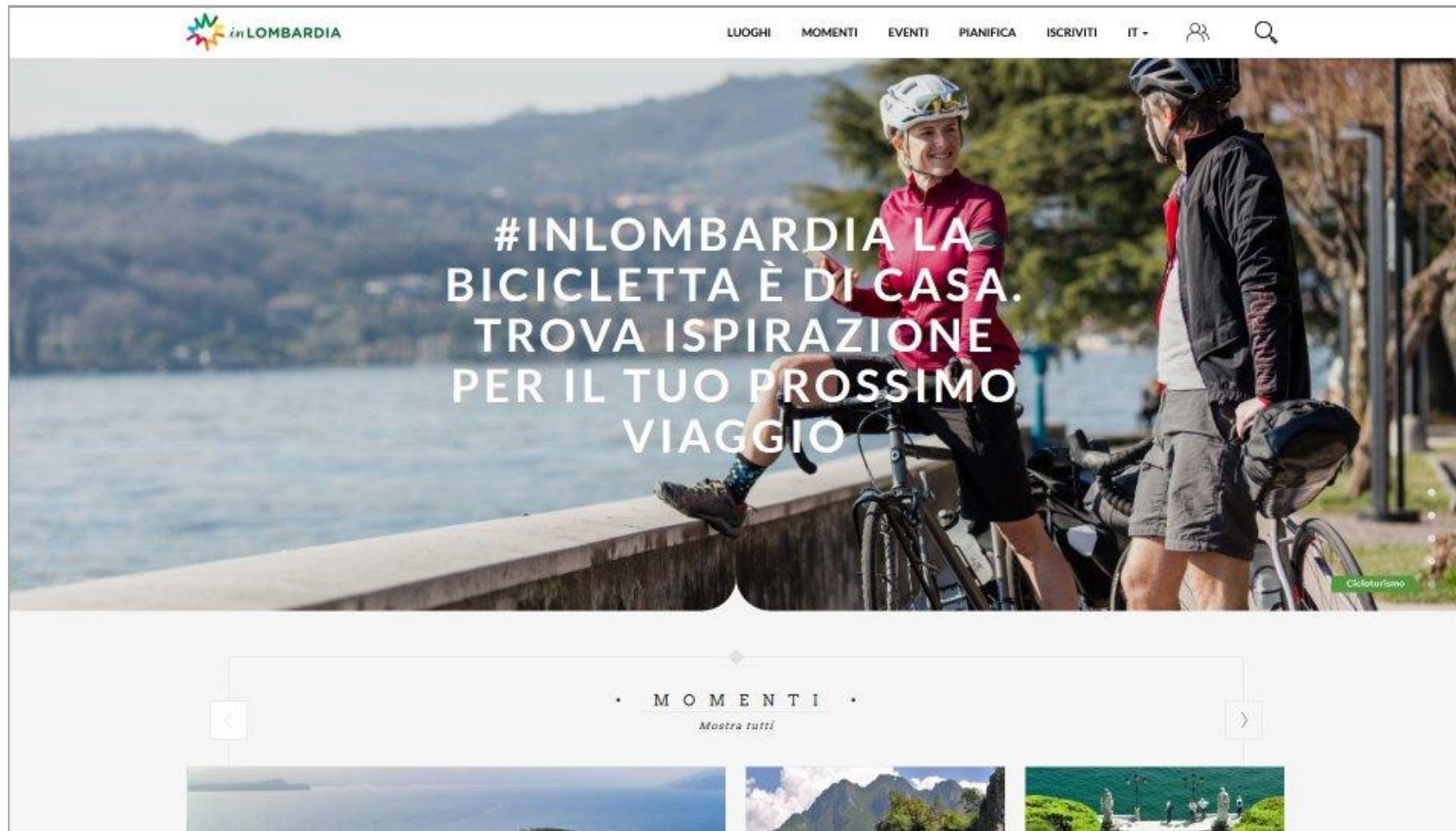
Another approach to solve the mobile-friendliness problem – an approach called **adaptive** – delivers different webpages to different devices.

The web server is instructed to **recognize the browser** used, and **the monitor's size**.

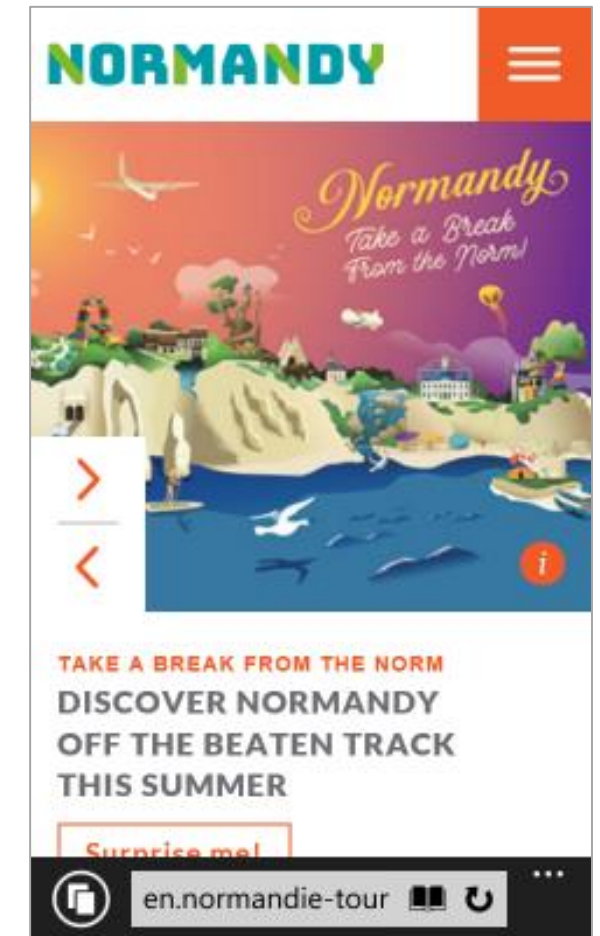
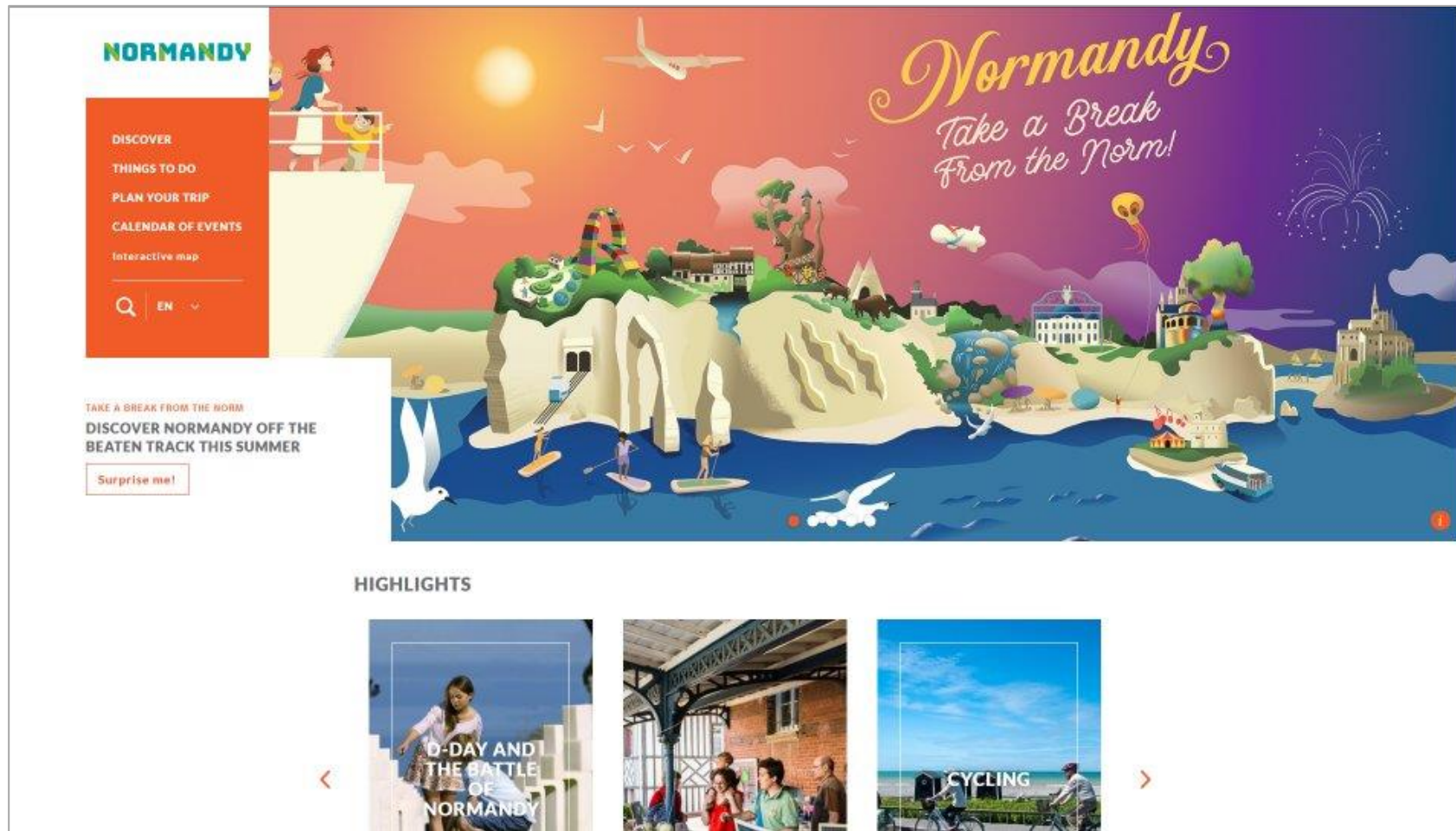
The adaptive approach allows to **diversify content** and **navigation** according to the users' needs.



An adaptive website for a destination



A responsive website for a destination



An unfriendly website for a destination



Patrimoine
Avignon, Capitale de la Chrétienté au Moyen Âge, conserve de ce destin grandiose deux monuments incontournables.

Le Pont d'Avignon Le Palais des Papes

Découvrir Séjourner Agenda Infos pratiques Pros CE Presse Recherche

Bienvenue sur le site de l'Office de Tourisme d'Avignon
L'office de Tourisme passe à 3 heures d'été. À partir du samedi 20 mars, ouvert du lundi au samedi de 9h à 18h, les dimanches et jours fériés de 10h à 17h. Voir +

L'ÉQUIPE VOUS RÉPOND
Un conseil pour votre séjour ? Contactez-nous directement !
04.32.74.32.74
MESSAGE PAR E-MAIL

À l'affiche
30 ans
Mirabilis - collections ...
De samedi 30/09 au dimanche 13/10, horaires d'été, cette ...

Idée séjour
Août à Avignon
Au mois d'août, Avignon vous accueille en famille pour des vacances ...

Reserver
Mise à jour 0.00 EUR
Passe-musee 0.00 EUR
Visite guidée 0.00 EUR
Evénements 0.00 EUR
Café 0.00 EUR
Châlière-Libano 0.00 EUR
Viel et gastronomique 0.00 EUR
Total: 0.00 EUR
Voir mes réservations

Je suis...
Séniors
En groupe

- Text too small to read
- Content wider than screen
- Clickable elements too close together

Patrimoine
Avignon, Capitale de la Chrétienté au Moyen Âge, conserve de ce destin grandiose deux monuments incontournables.

Découvrir Séjourner Agenda Infos pratiques Pros CE Presse Recherche

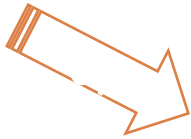
EVENEMENTS
HISTOPAD
LE PLUS ESTRÉSIS
FRANÇOISEZ
LES PORTES
DU PAYS
VIBRATION
MIRABILIS
Avignon
incontournables

www.ot-avignon.fr

Mobile configurations according to Google



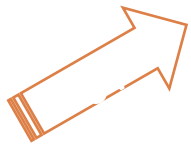
Responsive



Adaptive



Separate:
choosing is
up to the
user



Configuration	Does my URL stay the same?	Does my HTML stay the same?
Responsive Web Design	✓	✓
Dynamic Serving	✓	✗
Separate URLs	✗	✗

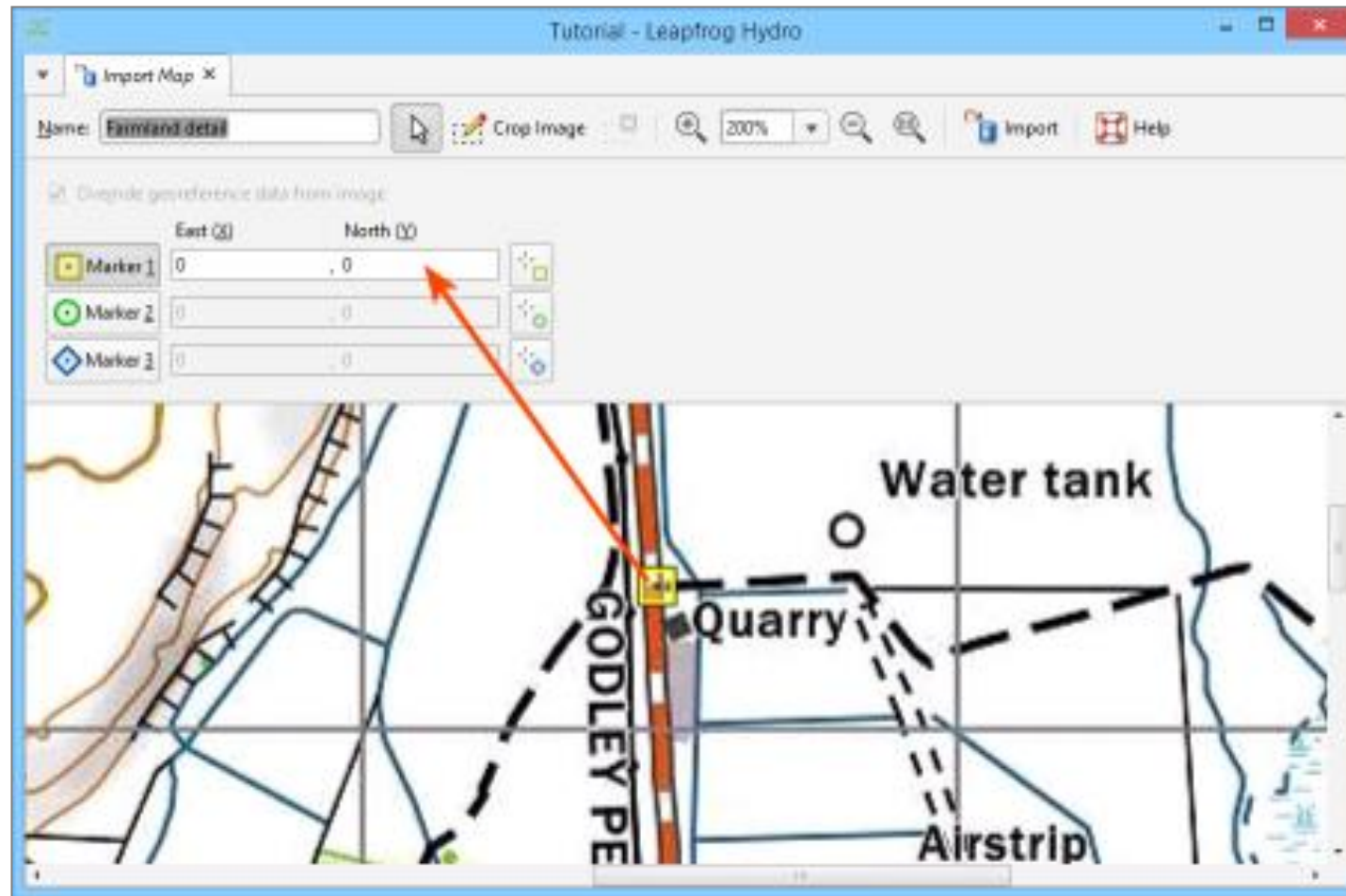
1. **Responsive web design:** Serves the same HTML code on the same URL regardless of the users' device (desktop, tablet, mobile, non-visual browser), but can render the display differently (i.e., "respond") based on the screen size. **Responsive design is Google's recommended design pattern.**

2. **Dynamic serving:** Uses the same URL regardless of device, but generates a different version of HTML for different device types based on what the server knows about the user's browser.

3. **Separate URLs:** Serves different code to each device, and on separate URLs. This configuration tries to detect the users' device, then redirects to the appropriate page using HTTP redirects along with the Vary HTTP header.

Source: Google

Georeference



Several functions in mobility depend on geographical positioning, which is based on georeference.

As we know, “to georeference something means to define its existence in physical space.”

image credit to Leapfrog

Georeference or geolocation?



Georeference = define a point by providing it with latitude and longitude data

Geolocation = locate a point according to its latitude and longitude data

Enter map coordinates

Enter X and Y coordinates (DMS (dd mm ss.ss), DD (dd.dd) or projected coordinates (mmmm.mm)) which correspond with the selected point on the image. Alternatively, click the button with icon of a pencil and then click a corresponding point on map canvas of QGIS to fill in coordinates of that point.

X: -77.03294 Y: 38.89030

Snap to background layers

From map canvas

Cancel OK

on/off	id	srcX	srcY	dstX	dstY	dX[pixels]	dY[pixels]	residual[pixels]
<input checked="" type="checkbox"/>	0	726.42	736.65	-77.05	38.90	-0.00	0.00	0
<input checked="" type="checkbox"/>	1	7907.04	3607.98	-77.01	38.89	-0.00	0.00	0
<input checked="" type="checkbox"/>	2	5478.38	478.62	-77.02	38.90	-0.00	0.00	0
<input checked="" type="checkbox"/>	3	1725.89	7262.68	-77.04	38.87	-0.00	0.00	0
<input checked="" type="checkbox"/>	4	3094.56	1849.79	-77.04	38.90	-0.00	0.00	0
<input checked="" type="checkbox"/>	5	3038.65	3730.89	-77.04	38.89	-0.00	0.00	0

OpenStreetMap Edit History Export

GPS Traces User Diaries Copyright Help About Log In Sign Up

45.48039,9.21878 Go

Search Results

Results from Internal

45.48039, 9.21878

Results from OpenStreetMap Nominatim

Via Donatello, Buenos Aires - Venezia, Città Studi, Milan, Lombardy, 20131, Italy

Results from GeoNames

https://www.openstreetmap.org/#map=16/45.48039/9.21878

“All right... But where am I?”



So far as maps and coordinates are concerned. But what does “tell” smartphones where we are?

Smartphones are concentrations of a nearly unbelievable crowding of technologies we don't think of when we have them in our hands.

The technological components of smartphones include an antenna which communicates with a system of satellites orbiting our planet.

It is the GPS antenna.

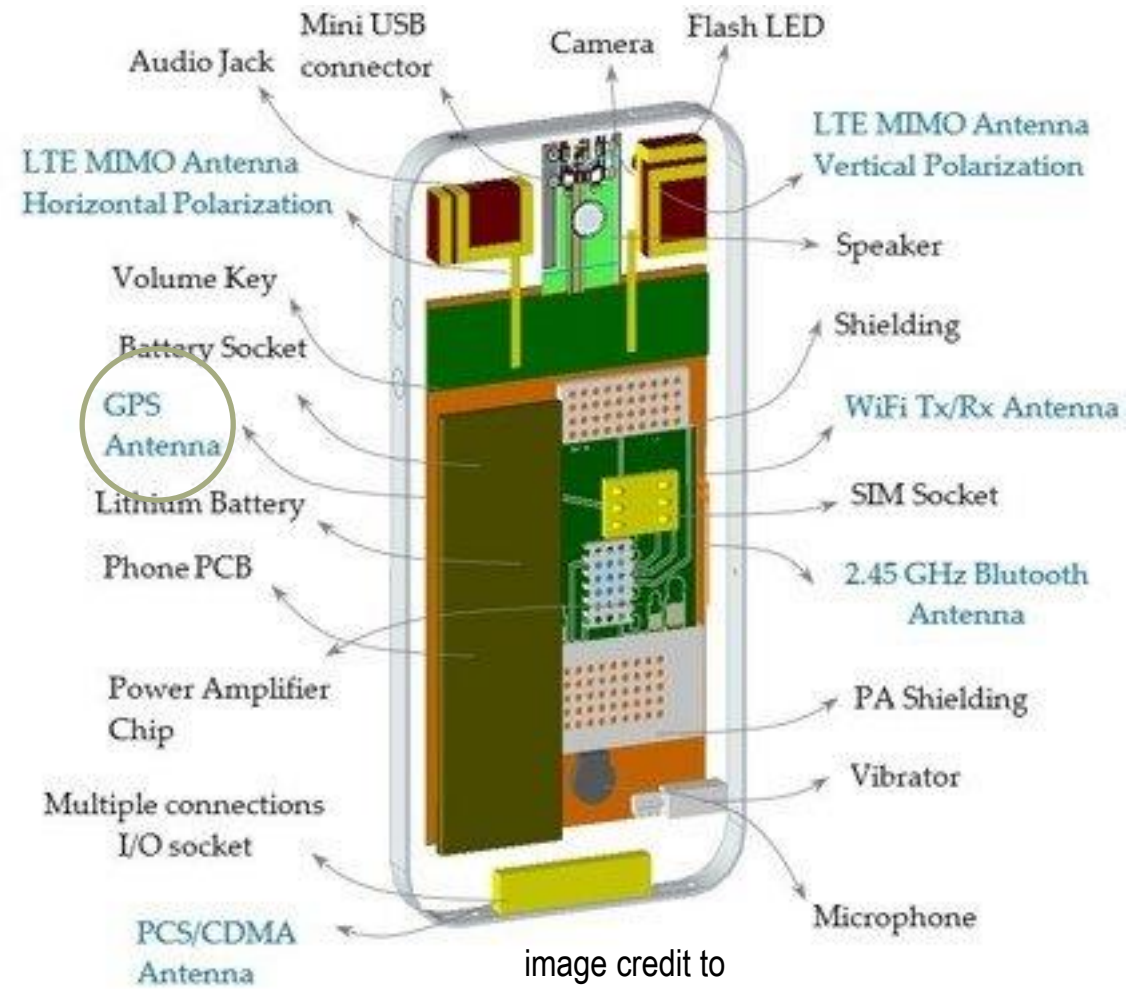


image credit to
Pinterest

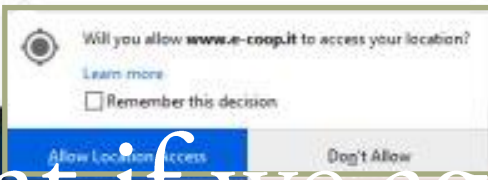
“All right... But where is my desktop?”



But when we're using a **desktop computer**, how can our desktop “**know**” where we are? First of all – and we will reconsider this point when talking about privacy – the **server** of the website we are visiting **asks our browser** if we are willing to **reveal** where we are. If we accept, the server reads where our **last current point of internet connection** is located (it may be our Wi-Fi router, our condominium control unit, the tethering smartphone), and **our geolocation** will be based on this.

This is the **process** through which, for example, **Google Maps** can suggest a route from the place where it connects with our desktop to a destination we want to reach, or a **supermarket chain** can let us know how far we are from the nearest supermarket belonging to that chain.

In short, when we're looking for something on a desktop computer, satellites are **not involved** at all.



What if we agree?



Close the Gap

La campagna Coop per promuovere la parità di genere femminile e combattere le disparità.

[Scopri di più](#)

CLOSE THE GAP

RIDUCIAMO LE DIFFERENZE

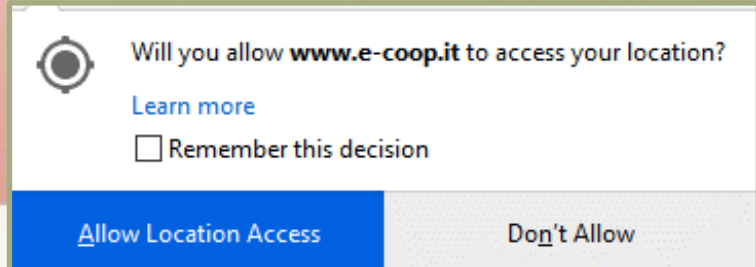
LA **coop** SEI TU.

Cosa Sarà? - Close

Il secondo streammeeting di inclusione di genere. Ve lo s

[Scopri l'evento](#)

in collaborazione con **COMITATI DELLA NERA** **ESACTICA**



Cerca il tuo negozio

Cerca il tuo negozio Coop preferito per scoprirne le offerte.

image credit to e-coop



And if we agree...

Close the Gap

La campagna Coop per promuovere la parità di genere femminile e combattere le disparità.

[Scopri di più](#)

**CLOSE
THE GAP**
RIDUCIAMO LE DIFFERENZE

LA **coop** SEI TU.

Cosa Sarà? - Close

Il secondo streammeeting di inclusione di genere. Ve lo s

[Scopri l'evento](#)

In collaborazione con: **CORRIERE DELLA SERA**
Una produzione di: **ELASTICA**

Ecco il punto vendita più vicino a te

Sei geolocalizzato a

Milano Palmanova

via Benadir
tel: 022899991

Aperto ora - Chiusura: 20:30

[Indicazioni](#) → [Vai alla Scheda](#) →

image credit to e-coop

we get the route

Navigation app interface showing route options from Via Donatello, 20131 Milano MI to Cimiano, 20132 Milano MI.

Partenza adesso

OPZIONI

- Invia indicazioni stradali al tuo telefono
- tramite Viale Lombardia e SPexSS11/SP11: 12 min, 3,1 km. Percorso migliore, nonostante il traffico abituale.
- tramite SPexSS11/SP11: 11 min, 2,9 km. Traffico moderato come al solito.
- 17:16-17:34: 18 min

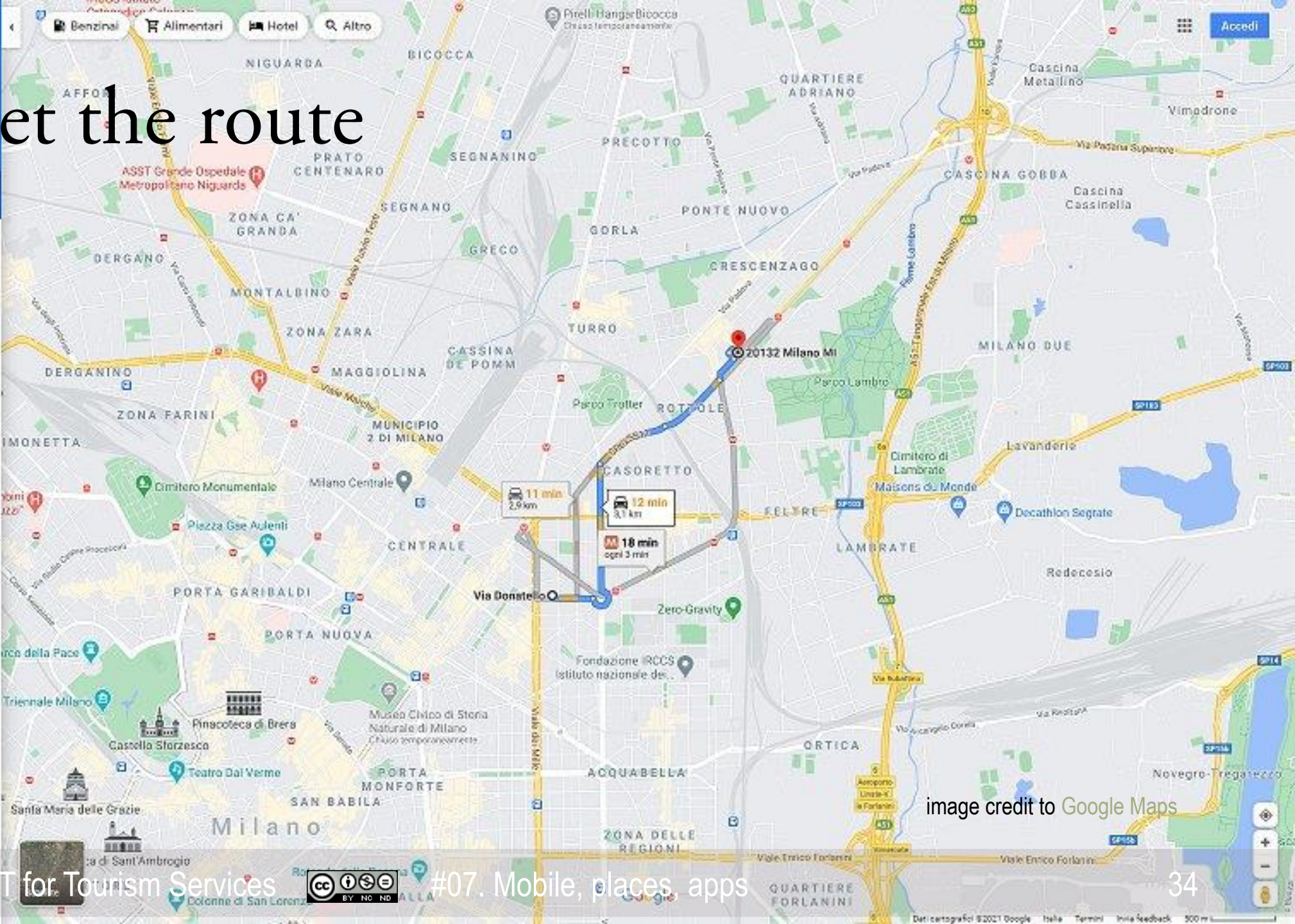


image credit to Google Maps

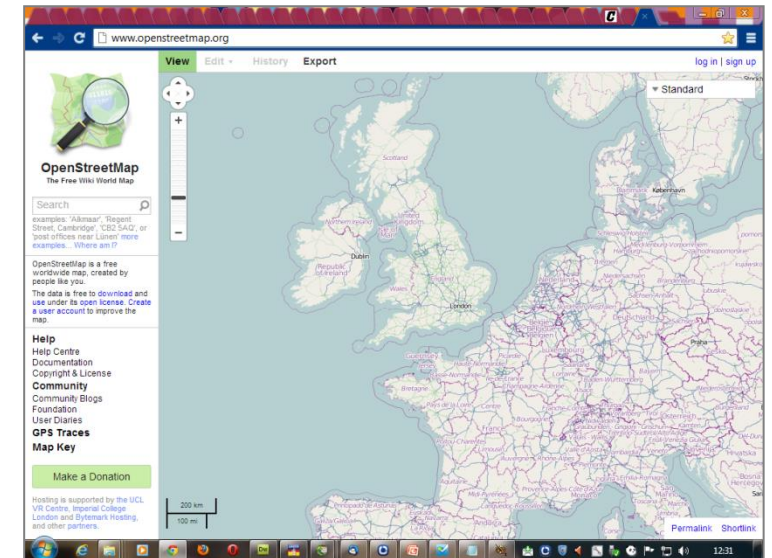
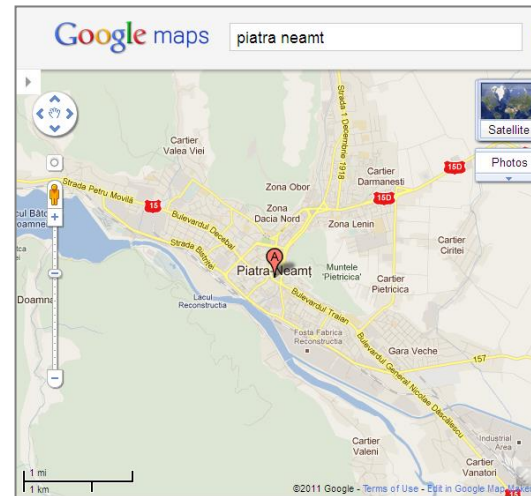
Google Maps vs. OpenStreetMap



Currently, the most diffused proprietary web mapping system is Google Maps. Google Maps relies on different providers of Geographic Information Systems (GIS) according to different countries, and is somehow opposed to OpenStreetMap, an open source map system.

OpenStreetMap is a free service.

Google Maps, instead, is a freemium service. This means that it's free for those who want to embed Google Maps in their websites, but with limitations. If the Google Maps embedded in a website are visited a lot, Google charges.



Of course, it's a matter of POIs



It is clear that the specific supermarket we were looking for is included in the list of **Points of Interest (POI)** that – as we know – geographical data systems store with their geolocations, identified in terms of **coordinates: latitude and longitude**.

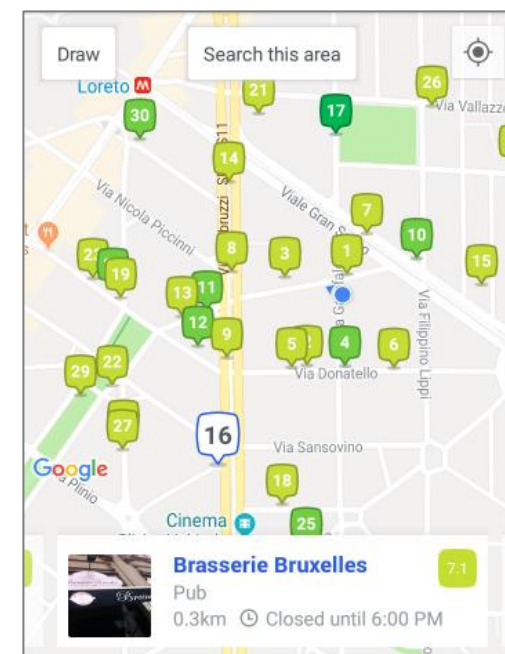
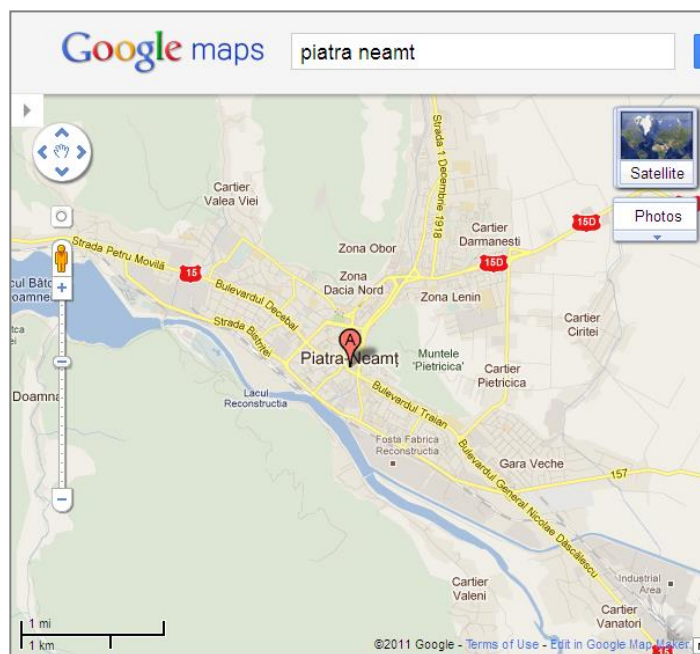



image credit
to gocanvas

Palazzo Madama



Madama Palace



Palazzo Madama
4.6 ★★★★★ · 1,501 reviews
Palace

SAVE NEARBY SEND TO YOUR PHONE SHARE

4-floor art museum with collections of antiquities & paintings plus decorative and applied arts.

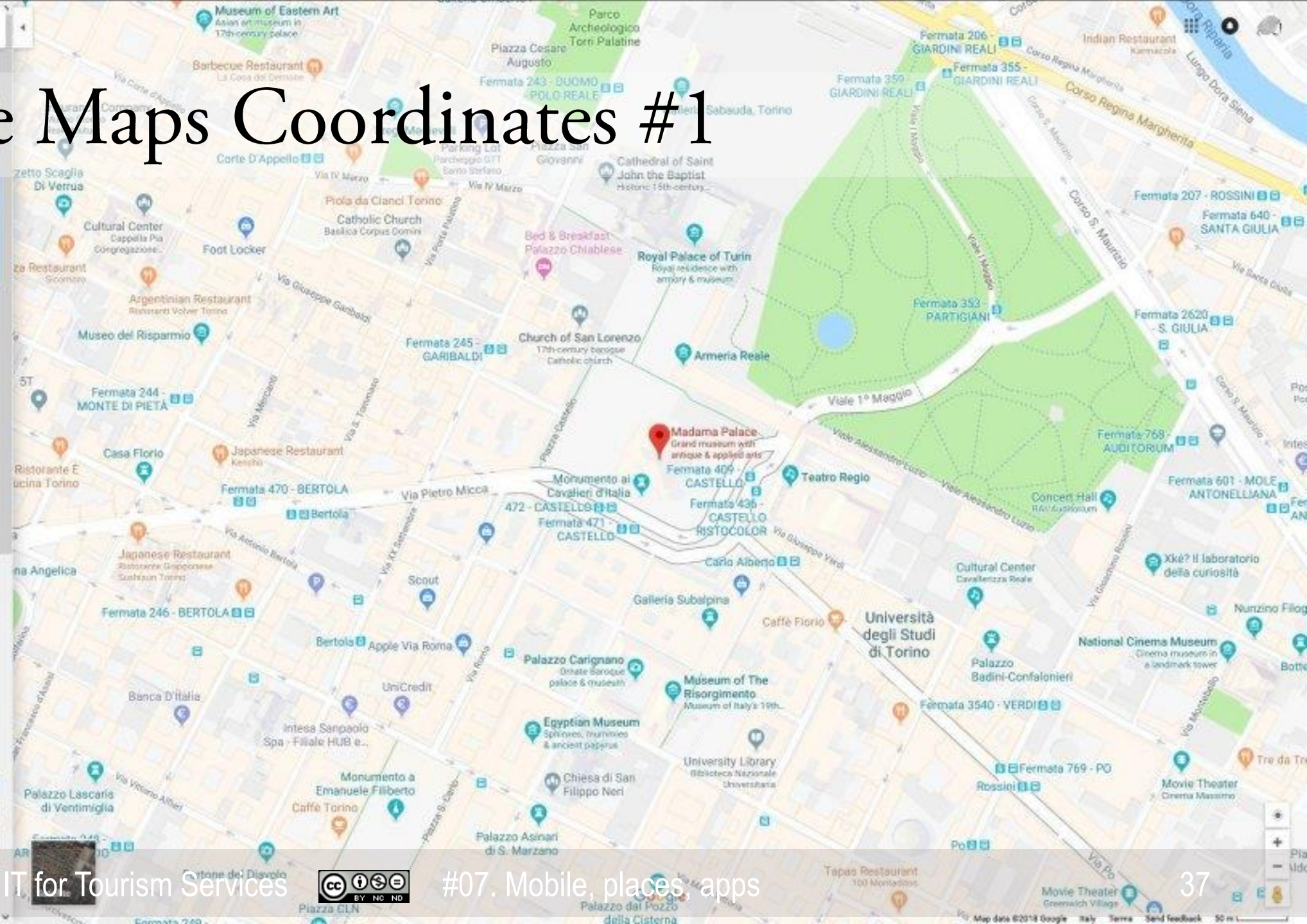
Piazza Castello, 10122 Torino TO
palazzomadamatorino.it
011 443 3501
Opens at 10:00 AM
Add a label
SUGGEST AN EDIT

Popular times Saturdays

Add a photo

Google Maps Coordinates #1



Google Maps Coordinates #2

Madama Palace
Palazzo Madama
4.6 ★★★★★ · 1,501 reviews
Palace

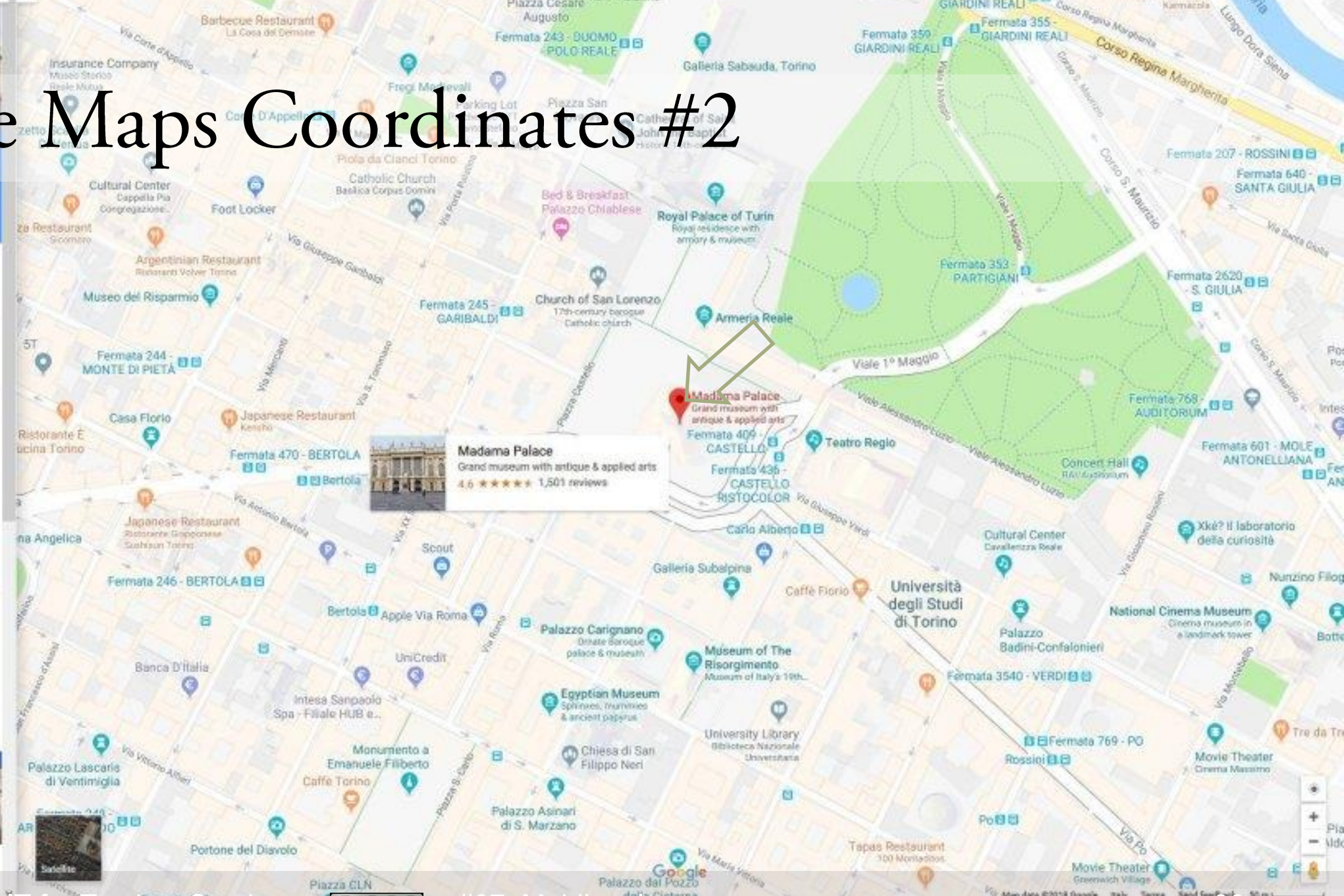
SAVE NEARBY SEND TO YOUR PHONE SHARE

4-floor art museum with collections of antiquities & paintings plus decorative and applied arts.

Piazza Castello, 10122 Torino TO
palazzomadamatorino.it
011 443 3501
Opens at 10:00 AM
Add a label
SUGGEST AN EDIT

Popular times Saturdays

Add a photo



Google Maps Coordinates #3

Madama Palace
Palazzo Madama
Directions

4.6 ★★★★★ · 1,501 reviews
Palace

SAVE NEARBY SEND TO YOUR PHONE SHARE

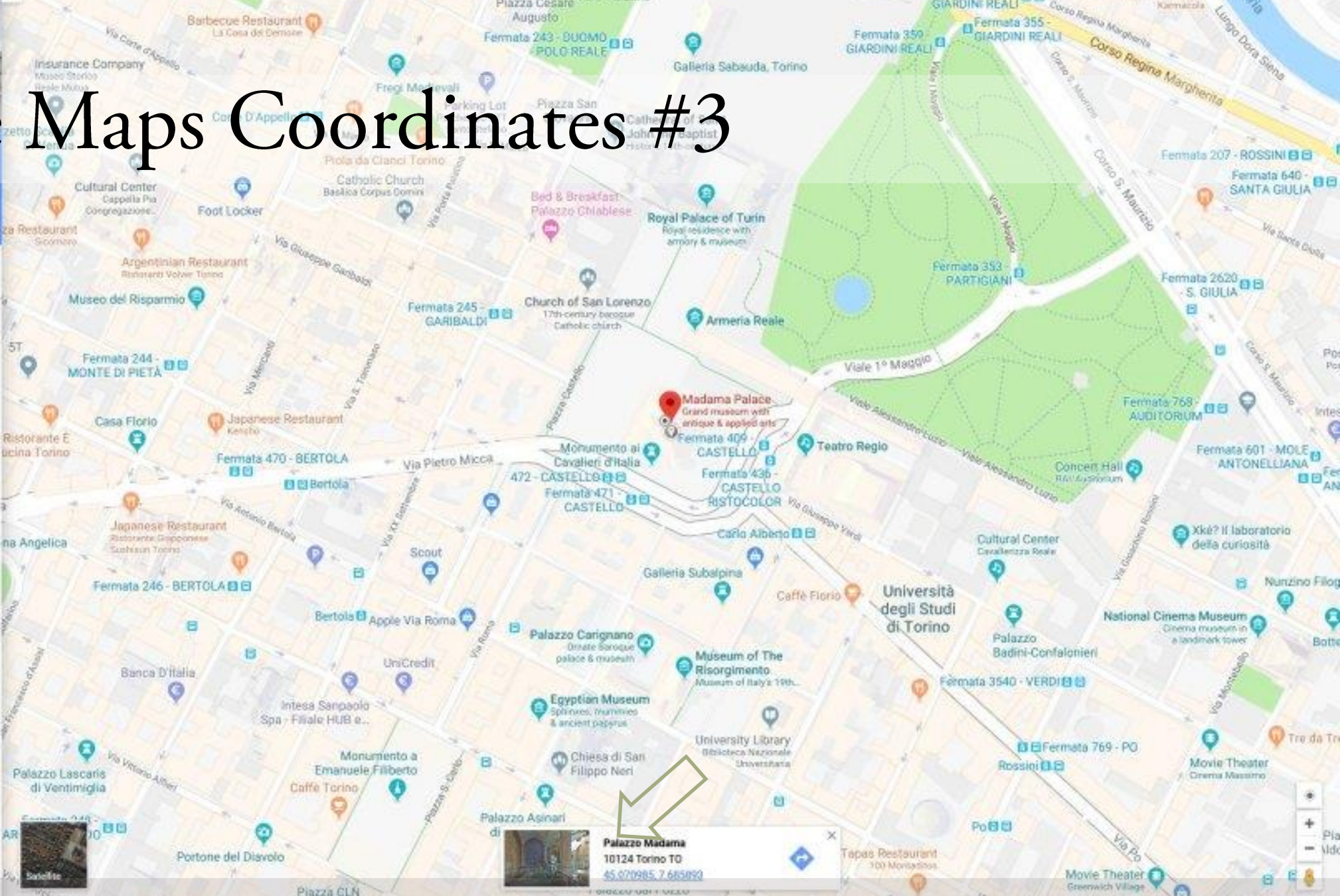
4-floor art museum with collections of antiquities & paintings plus decorative and applied arts.

Piazza Castello, 10122 Torino TO
palazzomadamatorino.it
011 443 3501
Opens at 10:00 AM
Add a label
SUGGEST AN EDIT

Popular times Saturdays +

9a 12p 3p 6p 9p

Add a photo



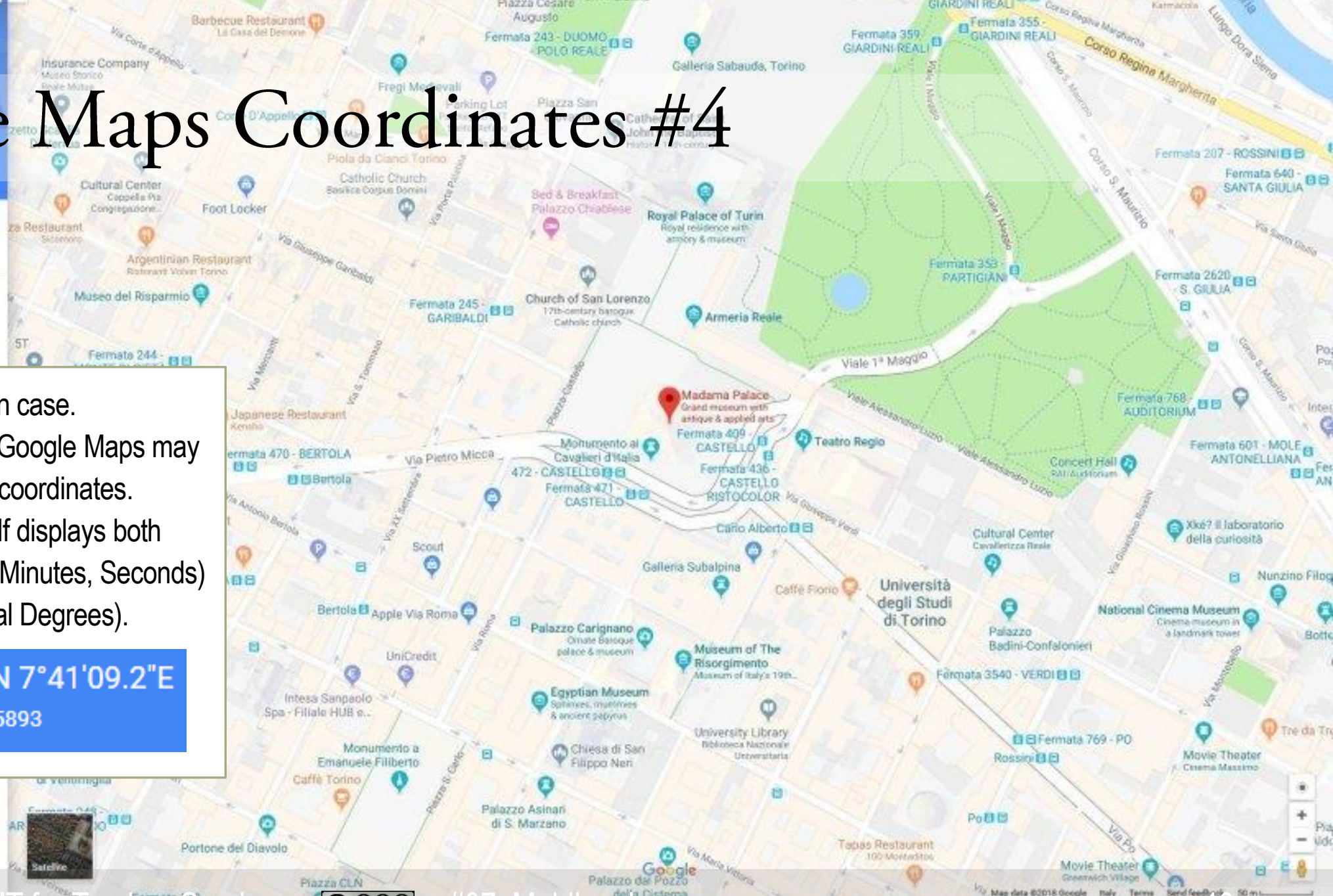
Google Maps Coordinates #4

45°04'15.6"N 7°41'09.2"E
45.070985, 7.685893

SAVE NEARBY SEND TO YOUR PHONE SHARE

Be careful, just in case.
Coordinates on Google Maps may differ from GPS coordinates.
And Google itself displays both DMS (Degrees, Minutes, Seconds) and DM (Decimal Degrees).

45°04'15.6"N 7°41'09.2"E
45.070959, 7.685893



Content is often georeferenced



Web services like GoogleMaps and OpenStreetMap, or ViaMichelin, are geographic per se, built for the purpose. Yet, several other web services make use of geographic data. For instance, at least three of the communities or social networking platforms we previously considered make use of geographic data routinely.



Location-Based Services



There are **seamless connections among locations** – tourism locations, too –, **their geographical representation** on the Web (on Google Maps, or on Foursquare) and **your customers' smartphones**.

This is very interesting from a tourism point of view.

1. Your website can use Google Maps to provide your customers with **directions** to your destination or your business.
2. Your destination or your business can provide **location-based information** about tourist services, heritage, and what-to-do.
3. Your destination or your business can provide such location-based information through **mobile devices** like smartphones.

Foursquare



There was a pioneer in this field.
The **Foursquare** service was created in late 2008 and launched in 2009. It still works.



Foursquare is a local **search-and-discovery service** mobile app which provides search-results for its users. It is delivered on desktop computers, too.

By taking into account **the places** that a Foursquare user has visited, **the things** that she/he **liked** before, and what other users **advised**, Foursquare **provides recommendations** about places **in the vicinity** of her/his current location.

A social recommendation system



When mentioning Dynamic Packaging, we introduced it as a technology that allows customers to **build their own travel itineraries** by consulting **recommendations from previous tourists** and assembling services accordingly.

We also observed that Dynamic Packaging is often connected with **Recommendation Systems**.

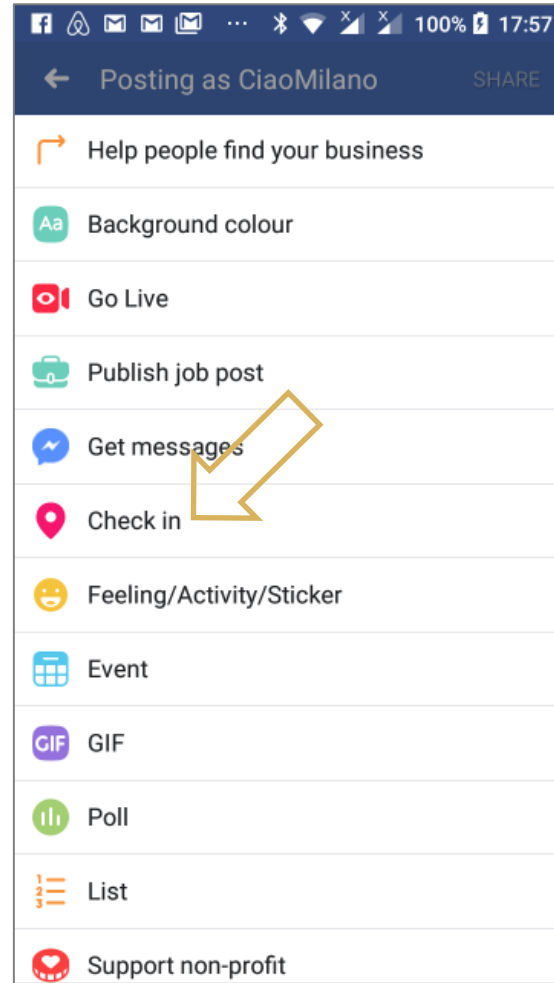
Well, Foursquare was the first Recommendation System to be **both social and georeferenced**.

Its LBS, or **Location-Based Services**, are based on social sharing.



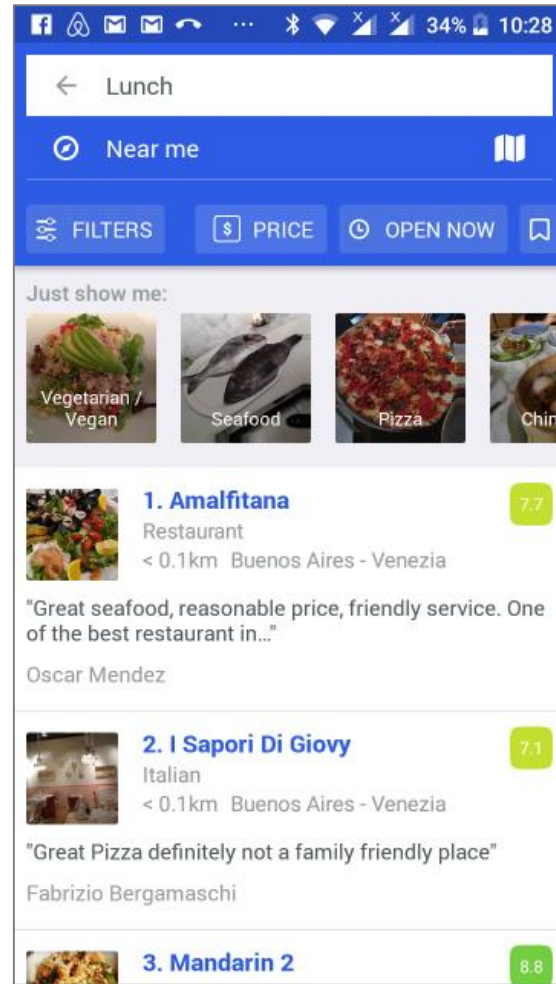
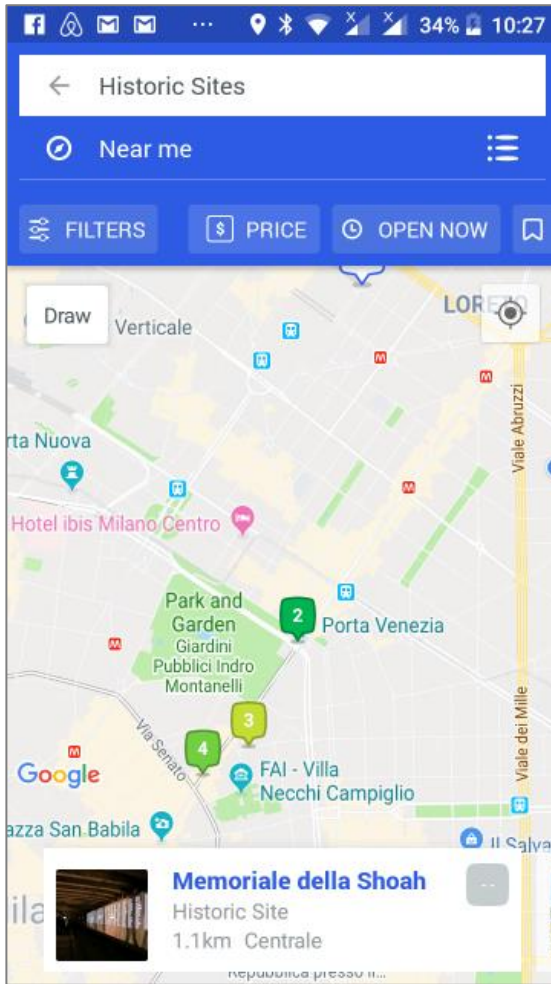
image credit to bug-software.com

Check-Ins

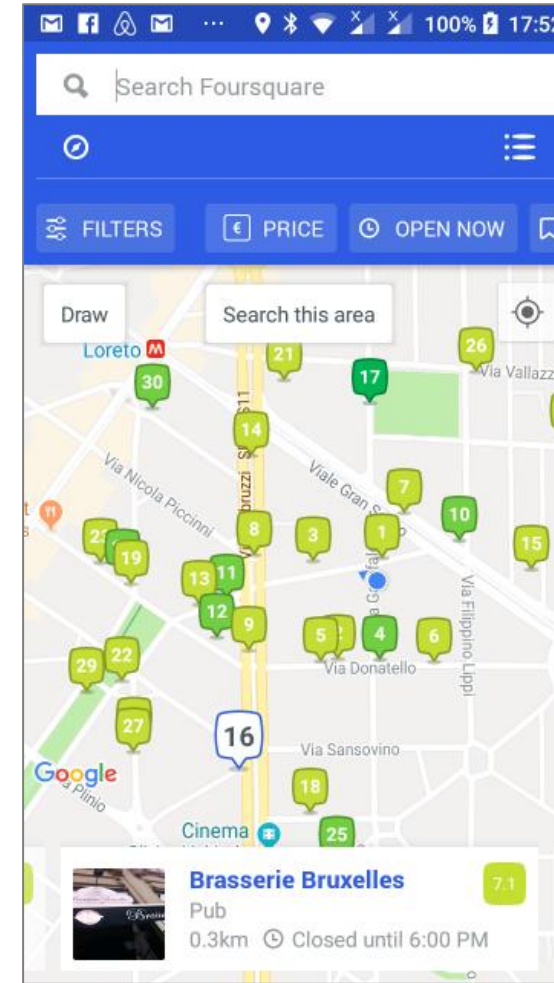
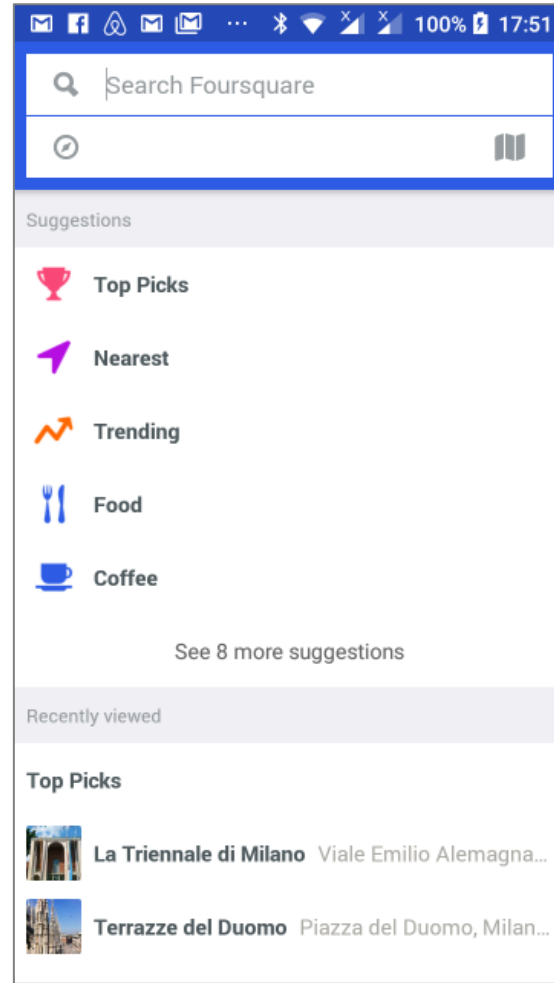
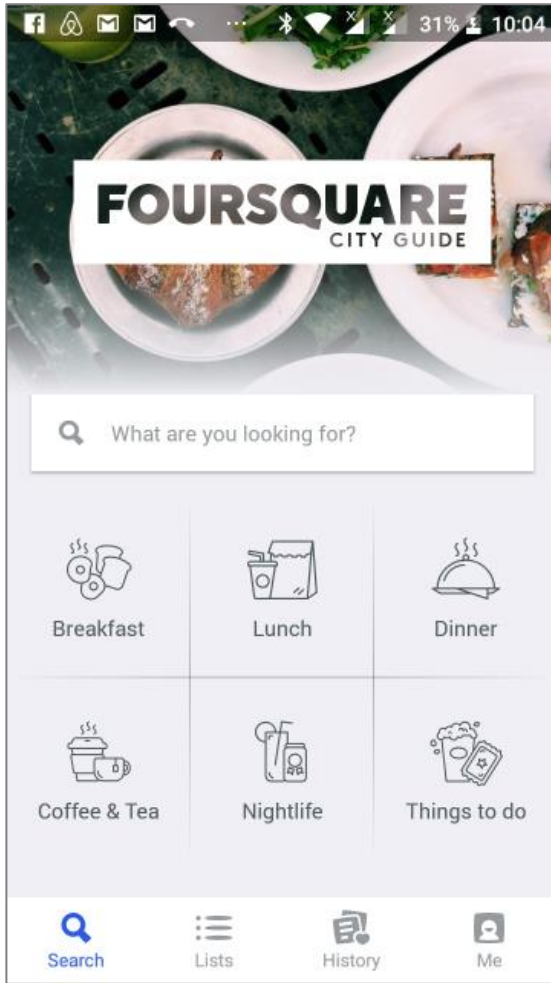


When Facebook introduced its **Check-In** function – to mark one’s presence in a POI – it simply **copied** that function from Foursquare. In the Foursquare platform, check-ins are currently performed through **Swarm**, Foursquare’s sister app.

Foursquare sample #1, mobile near me

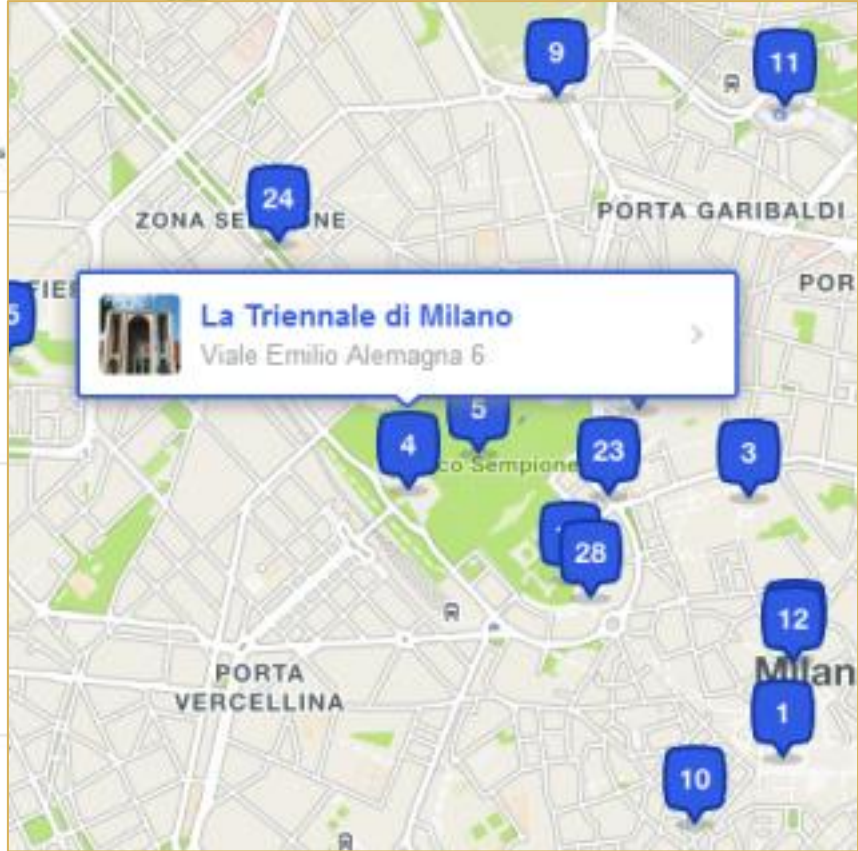


Foursquare sample #2, mobile search



Foursquare sample #3, desktop

- Suggestions for Top Picks near Milan
- Filters: [Specs](#) [Hours](#) [Following](#) [Points of Interest](#) [Saves](#) [Tips](#)
- 1. Piazza del Duomo**
 Plaza
 Piazza del Duomo, Milan
 Save
 - 2. Gallerie d'Italia**
 Art Gallery
 Piazza della Scala, 6 (Via Manzoni, 2), Milan
 Save
 - 3. Pinacoteca di Brera**
 Art Museum
 Via Brera 28, Milan
 Save
 - 4. La Triennale di Milano**
 Art Museum - EE
 Viale Emilio Alemagna 6, Milan
 Save



A detailed view of the Foursquare page for 'La Triennale di Milano'. The page features a header with the name and address, a grid of photos showing the building's exterior and interior, and a section for tips and reviews. The page also includes a 'Save' button and a 'Share' button. The page is overlaid on a larger screenshot of the Foursquare website.

Destinations vs. Wi-Fi coverage



Connections costs are a problem, which **Wi-Fi coverage** may help to solve.

“**Infrastructure**, especially those that support digital connectivity, are strategic for enabling and supporting **smart city tourist services**.”

Of course, different levels of complexity and cost infrastructure connect to different governance levels.

Fibre backbones and 5G networks involve national and regional government and high-level decision makers whereas **free Wi-Fi** directly involves local government, municipality and citizens.”

Lorenzi, Mancin, Cagol (2014)

Wi-Fi coverage may be insufficient



image credit to Kaspersky Lab
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Apps, Apple, and closed worlds



The mobile phone technology has changed people's habits. Smartphones are now more popular than wristwatches.

Apple has imposed the iPhone model, a closed world where you enter only by accepting Apple's operating system iOS, and gradually adding specific applications.

This is the model we have to refer to, when we talk of apps.



Apps vs. websites

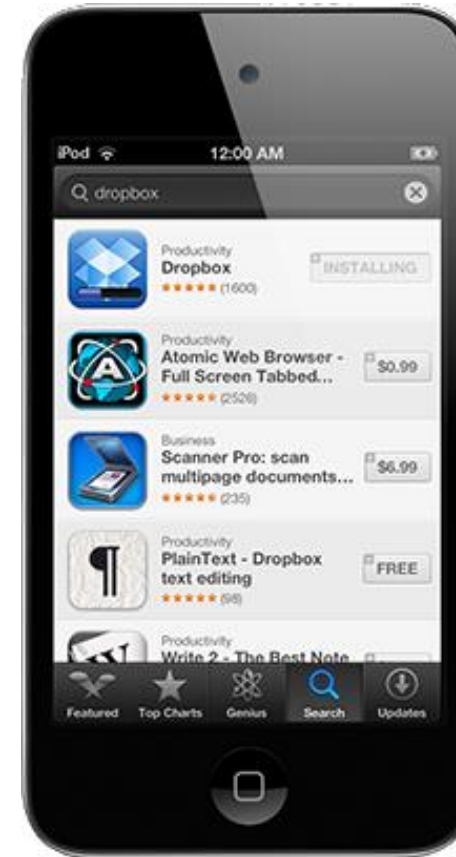


Very similarly, Google has imposed its own Android operating system worldwide.

People often install iOS or Android “horizontal” apps, as for social networks, transport or maps.

Less often do they download “vertical” apps for a single town or a resort...

Individual towns, resorts or cultural institutions are in growing need of mobile-friendly websites.



Key points

1. Mobile is the king
2. When out of home, people have different needs
3. For websites, mobile-friendliness is a must
4. Location-Based Services (LBS) are services based on locations
5. Wi-Fi coverage is increasingly crucial
6. The Web is an open world, while apps are closed worlds
7. Tourist apps are worthwhile if they are “horizontal”