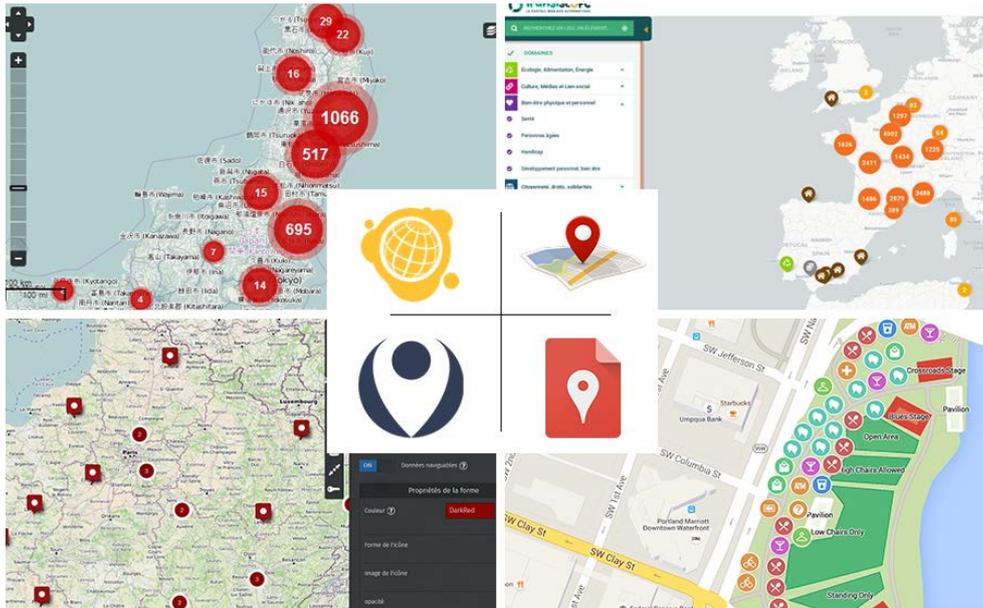


BENCHMARKING OF ONLINE INTERACTIVE MAPPING SOLUTIONS FOR BEGINNERS



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This study was carried out jointly by a team of employees and volunteers of CartONG.

I. Introduction

This document aims to analyze and compare the different possible solutions for creating online maps. The different tools that are reviewed in this document allow to make simple maps and do not require any particular knowledge of cartography, computer science or Geographic Information Systems¹ (GIS).

This comparative analysis stems from the support CartONG has been providing to several small and medium-sized civil society organizations in 2020 – who have neither the time nor the relevant specialized human resources – wishing to set up an interactive map in order to be able to communicate on their actions and projects.



The typical case is an NGO wishing to publish an online map of its projects, with a geographical location alongside attribute information on each project (name, type of project, objective, description, photo...) and having no other notable cartographic needs (multi-layer, particular spatial functionalities...).

¹ GIS (or Geographic Information Systems) are tools and methods for managing spatial data. The associated tools (the best known being QGIS or ArcGIS) are tools with much more advanced functionalities than those presented in this benchmarking.

I.1. Summary of study findings

As a result of our analysis, four main tools were identified, each offering different possibilities to publish online maps. They do not require advanced skills but it can be more or less complicated to properly configure one's map and upload one's data.

In short, we advise that you use:

GoGoCarto if...	uMap if...	Ushahidi if...	My Maps if...
You wish to publish a map in an interface only available in French	You want to publish a map quickly	You wish to publish a map in a multilingual interface	You want to publish a map quickly
You wish to go relatively far in the configuration of your map	You want to integrate the map into your website easily	You wish to include data collected directly by Mobile phones/Emails/SMS	You are comfortable with the Google interface
You want to be able to manage different roles in relation to the map	You don't require advanced settings for your map	You have a minimum budget and dedicated technical capacities	You don't need to have graphic customization and advanced parameters

I.2. Methodology

These tools were evaluated in response to a request from [FORIM](#) to develop an interactive map linked to its COVID-19 emergency campaign, submitted via the [Information Management COVID-19 Help Center](#) that CartONG made available to the sector in 2020.

A first phase focused on the pre-selection of tools meeting a first level of criteria, followed by a second and more detailed phase of evaluation of the tools using more advanced criteria.

CartONG used data provided by FORIM, as well as other sources to take into account other analysis criteria (integration of videos, massive data import, etc.) to conduct the tests carried out on the various tools presented in this study.

I.3. Benchmarking features

The online interactive mapping tools that are being considered in this study refer to a set of tools which include the entire data management chain from data entry to their cartographic representation, allowing users to set up online hosted maps with the possibility of customization and integration of external data. These tools are accessible via a browser with an internet connection and guarantee direct access without any prior installation or knowledge of web interface or web development, and of cartography.

For this study, CartONG first started by pre-selecting different online mapping tools considering their **cost** (free tools or at an accessible price for very small organizations), the **possibility of a full and quick handling of the tool** (management of integration forms, graphic customization, data import...), the criterion of a **"light" infrastructure** (i.e. in line with the need of having a single online map, without the need for more advanced options), and with **basic user management**.

The four pre-selected tools were:

- GoGoCarto
- Ushahidi
- uMap
- Google My Maps

Once this initial selection had been made, our detailed analysis focused on a series of criteria that we considered both essential and comprehensive for understanding the differences in the use and implementation of an interactive map.

These criteria include:

- The **handling**, whether by the public (navigation on the map) or by the author of the map (ease in setting up the map, in managing user rights...).
- **Accessibility**, on the internet but also the ability to view the map on a mobile phone.
- **Customization**, with the possibility of integrating external content (database, photos, videos) and graphic customization of data (choice of colors, icons).
- **Data management**, with the possibility of importing a large amount of data (from an Excel file for example), and the capacity to host this data directly on the website.

*(The full list of these criteria is available in **Annex 1**)*

 **Warning:** As the typical case presented in this study is about the public cartographic presentation of non-sensitive NGO projects, this study takes into account the criterion of data protection but without putting it at the heart of the analysis. If you're looking to map personal data or sensitive data, keep in mind that you'll have to carry out a risk assessment of your needs and a specific analysis of the tools you'll use well beyond the one which was conducted here.

II. Presentation of the tools

II.1. GoGoCarto



GoGoCarto is a free mapping tool set up by the Colibris association with the aim of offering an alternative to existing online mapping tools.



GoGoCarto - [The Transiscope Map](#)

GoGoCarto makes it easy to communicate about the author of the map, with the customization of tabs and the home page that can be used as a communication page. The integration of media content remains limited - while photos integrate well, this is not the case for videos, whether they are hosted externally (YouTube) or not. Adding data is simple, if one takes the time to set up the forms or the dataset to be integrated. Although not necessary, the possibility of real-time connections to the data via an external API² also offers many possibilities, such as pairing with a Kobo³ form for example.

The management of data by category (e.g. type of activity) is a real asset of this tool, which allows one to filter by the categories one has created and assign them a different icon and color. Using this tool for the first time can be somehow challenging given its numerous parameters, yet thanks to the existing video tutorials (in French), one can quickly grasp how the map works by doing a few tests and a bit of practice.

² An API (or Application Programming Interface) is a structure that publishes data on an online service. This data can then be used by a third party user.

³ KoboToolBox is a suite of tools for carrying out mobile data collection (MDC) through the implementation of forms on smartphones. It is a solution widely used by humanitarian and development NGOs.

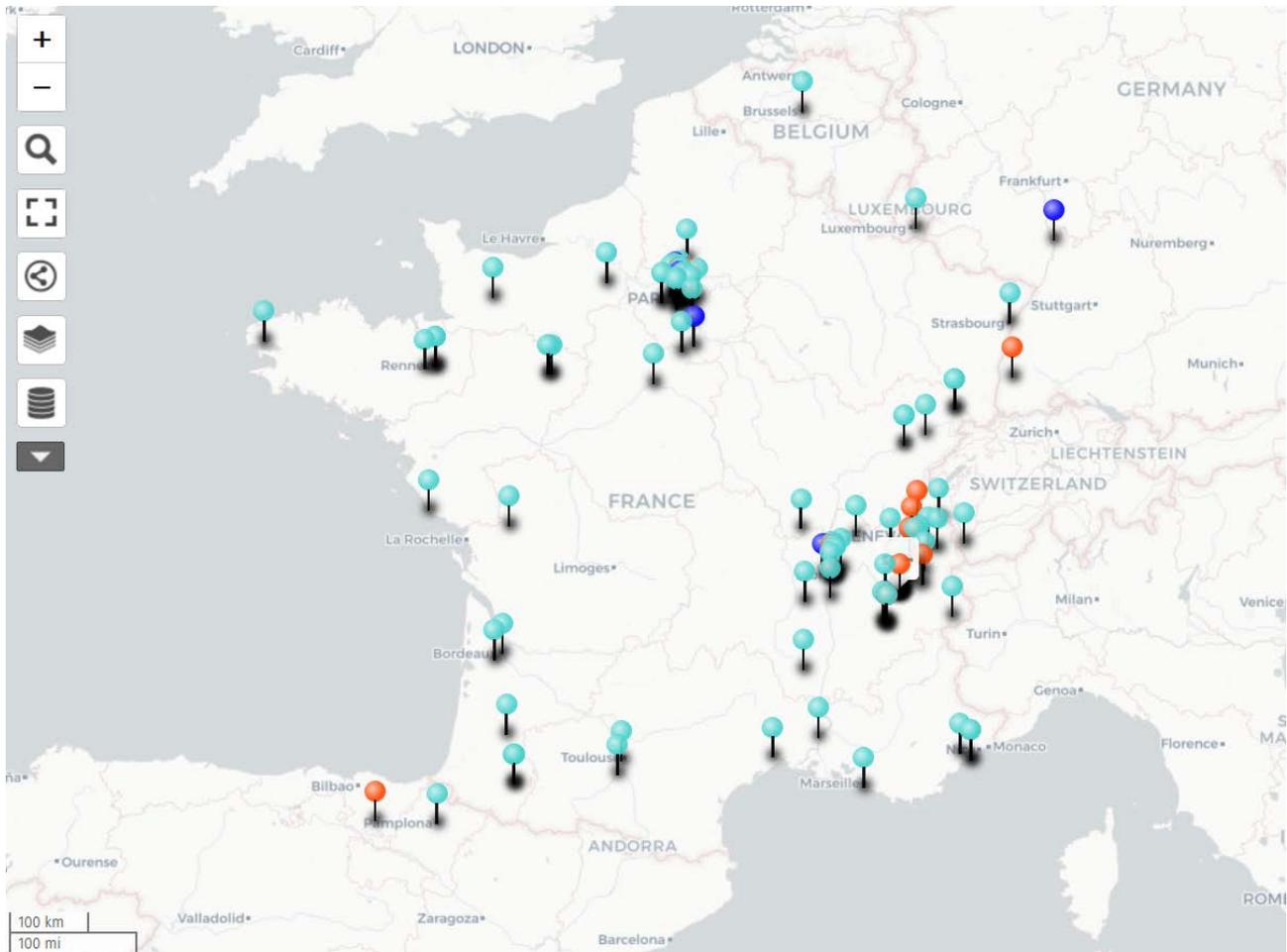
GoGoCarto is a comprehensive tool that can be widely configured to achieve advanced results. It is best suited for maps that are intended to be participatory / collaborative, with a form set up to allow the addition of data by different users. The tool allows for an easy classification of, and communication on one or more topics thanks to the management of categories. However, it is a tool that can only be used in French and will therefore be more suitable for French-speaking associations/NGOs.

GoGoCarto	
Main advantages	Effective communication tool Advanced graphic style customization Data filtering possible
Main disadvantages	Only in French Difficult to integrate this map on a website
Created by	Colibris Group
Creation date	2017, then 2020 as an open-source tool
License	AGPL
Target users	Associations/NGOs wishing to communicate on its activities or projects and having a bit of time to do the set-up.



11.2. uMap

uMap is an online mapping tool developed by OpenStreetMap that allows you to create a personalized map which can be easily integrated into a website.



uMap - [Map of CartONG staff and members](#)

Data integration is very simple when using uMap, but as few parameters are available (i.e. type of data, symbols that can be used), what can be done remains limited. It is possible to integrate data with an API, which is interesting when setting up a map linked to a Kobo questionnaire or external data for example.

The customization of the data remains very basic, with a set of icons and default colors, as well as an interface that is practically impossible to adapt. Customization is either limited to each point individually, or by data layer⁴ (with the possibility of importing custom icons). This means that you cannot automatically assign a color to points belonging to a similar category within the same layer. However, uMap is very easy to use, and the management by button and by field makes it easy to understand how the map works. The integration of media content is also very simple and allows the integration of all media types (hosted photos and videos).

⁴ Each layer corresponds to a piece of data (a layer on projects and a layer on the location of teams, for example).

It is possible to create an editing link, which will make it possible for third party to edit the data. However, uMap doesn't allow to directly manage different types of users (administrators, editors...).

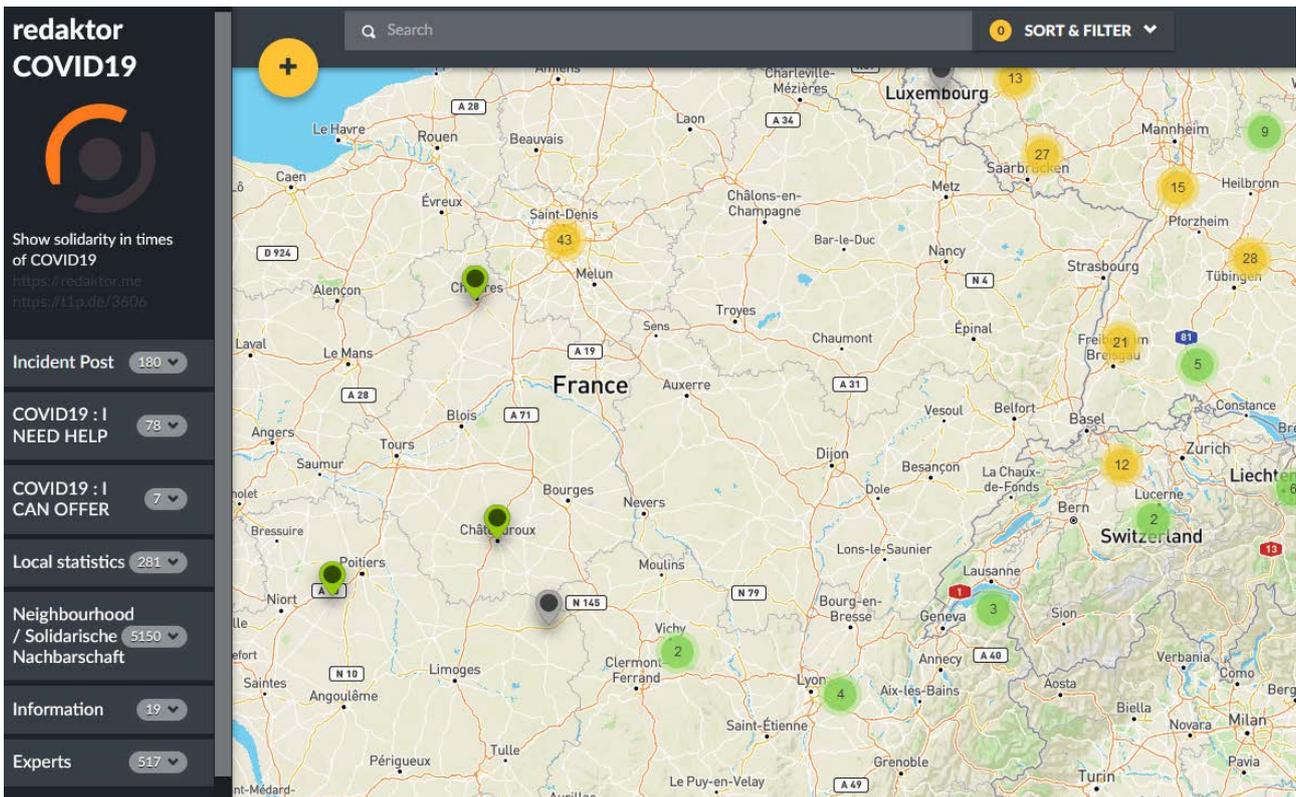
uMap is one of the simplest tools to understand and use, but it quickly proves to be limited. It should be considered if one wants a very simple rendering, especially in graphic terms, and if one wants to spend very little time on creating an online map.

uMap	
Main advantages	Ease of handling Simple video integration Simple integration into another website
Main disadvantages	Limited personalization User management
Created by	OpenStreetMap
Version	1.2.2
License	Open-source WFTPL
Target users	Associations/NGOs totally new to the management or integration of geographic data



11.3. Ushahidi

Ushahidi is a website that was created in 2008 to map post-election violence in Kenya. The website has since developed an online paid crowdsourcing tool to create participatory maps based on posts (or testimonies) collected by email or by SMS messages. The tool works with posts which correspond to the publication of data via a form.



Ushahidi - [Covid-19 Initiatives \(Redaktor\)](#)

Communication on a Ushahidi map is simple, though limited, with a side panel to present the author and purpose of the map.

The integration of media content remains limited to photos and external links. The absence of pop-ups on the map data restricts the possibilities of displaying information. Data integration is simple, if one takes the time to set up the forms or dataset to be integrated. The possibility of real-time data connections via various sources (Mail, Twitter, SMS) is a plus but requires advanced configuration.

Each layer of *Surveys* can be linked to a different color, but it is not possible to change the style according to the category of survey or to display an icon. It is easy to set up the editing of the map with one or more administrators. All you need to do is create an account to add data. Data validation can be done through an administrator account if necessary, and it is possible to indicate whether certain fields are private.

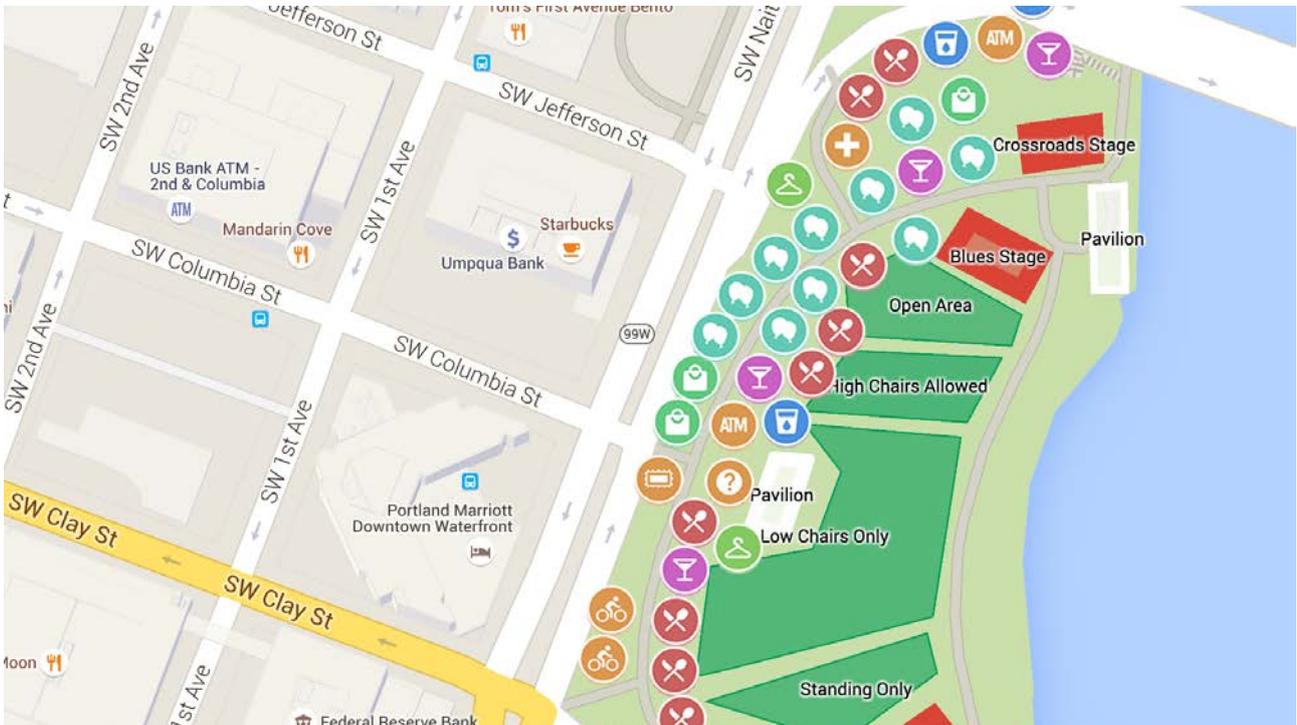
Ushahidi is a comprehensive tool that can manage a large amount of data and is highly configurable. Its real asset is the existence - if one wishes to use it - of a mobile application to add surveys / posts from the field for example, with the GPS integrated in the smartphone. However, setting up a map that collects surveys remains cumbersome and therefore it is not recommended to use Ushahidi, if it is not the desired use.

Ushahidi	
Main advantages	Multi-language interface Data analysis Data can be collected via a mobile application or by SMS
Main disadvantages	Paid tool Limited personalization
Created by	Ushahidi (Company)
Creation date	2008
Version	ND
License	AGPL
Target users	NGOs with a more technical profile wishing to develop an information collection tool using direct forms, with data management and analysis.

II.4. Google My Maps



Google My Maps is an interactive mapping tool developed by Google. This free tool requires a Google account to set up a map that can be published online. It is easy to use because it has an interface similar to Google Maps.



Google My Maps - [Presentation map](#)

Communication and access to the map is simple but limited, with a side panel to explain the purpose and introduce the author of the map, for example.

The integration of media content remains limited to photos and external links in a side panel. It is possible to customize each layer and each type within an existing layer with a color or an icon from the Google catalogue.

Google My Maps is a very easy to use and basic tool. It is based on the Google interface, and is therefore very intuitive. It remains very limited though when it comes to data import and the integration of multimedia content.

The collaborative aspect of the tool makes it fairly easy to set up roles in reading or editing the map, in the same way as a Google Doc.

Google My Maps allows you to make a very simple map containing various icons with a Google interface that is very accessible for a beginner user. However, this tool is still limited in terms of map personalization.

Google My Maps	
Main advantages	Ease of use (Google interface) Data filtering possible
Main disadvantages	Limited rights management No dynamic data import (via an API)
Created by	Google
Creation date	2007
License	Owner
Target users	NGOs with little knowledge of geographic data management/integration (e.g. identifying important places, disseminating places of operation)

III. Annexes

III.1. Annex 1. Presentation of the analysis criteria

The analysis criteria for each tool are listed below, divided into several topics:

- **Visibility / Accessibility:** Visualization of the map
- **Mobile Responsive:** Use / Management of the map on mobile phones
- **Hosting/Server:** Data management by the tool
- **Media:** Integration of media content
- **Data integration:** Import / Export of data
- **Symbology / Graphic customization:** Graphic modifications
- **Getting started:** Ease of use
- **Navigation:** Using the map
- **User management:** Map administration
- **Tool license:** Open source tool
- **Data management:** Status of implemented data

Topics	Criteria	Description
Visibility/ Accessibility	Mobile version	The map is accessible from a mobile phone
	Narration	Possibility of a homepage to present the map, the author, the credits...
	Visual impairments	Modular map for the visually impaired
	Multilingual	Possibility to have several languages for the map
Mobile Responsive	Navigation	Ease of navigation on the map
	Offline access	Access to the map without internet / Possibility to download the map
	Adding GPS points	Using your phone to collect data
	Data management	Adding / Changing data
	Itineraries	Possibility to make an itinerary
Layout / Printing	Layout	Lay out a map from the data
	Printing	Map printing

	External Printing	Link the data to an external tool for printing
Hosting / Server	Data hosting	The website hosts the data displayed on the map
	Amount of data	The site can host a large amount of data
	Statistics of the accessible site	Possibility to find out how many people have consulted the map
	Price	Set-up costs
Media	Content image / text	Integration of images / text in the map
	Video content	Integration of videos directly into the map
	Web video integration	Integration of videos via a web link (YouTube, Vimeo)
Data integration	Form	Data integration via a modular form integrated into the platform
	Data import	Adding data via a file (csv, json, shp...)
	Data export	Data download via file (csv, kml..)
	Real-time data import	Connection via an API, a mobile collection platform ...
Symbology / Graphic customization	Categorization of projects	Display a different color / shape depending on the type of projects
	Customized icons	Customizable icons (import / modification)
	Colors	Varied choice of colors
	Polygons	Integration of polygons on the map
	Map background	Different background options
Getting started	First use	Difficulty in handling the tool
	Time	Duration of setting up a full map
Navigation	Search by location	Search for a place by toponyms
	Account	Creation of an account possible to access the map

User management	Moderation / Validation of data	The data entered by a user can be validated by a moderator
	Account	Creation of an account possible to add points to the map
	Interfaces according to status	Possibility to have a public interface and an admin interface for example
Tool license	Open source tool	Site / tool in open source
Data protection	Local hosting	Data can be hosted locally
	Server location	Location of the GDPR-compliant server
	Private data	Possibility to have differentiated public/private fields that can be chosen or not to be published on the map
	Data encryption	Possible encryption of personal or sensitive data
	Privacy Policy available	Access to privacy policies

III.2. Annex 2. Summary table of the comparative analysis

- : YES
- : NO
- ~ : YES/NO
- N/A: Not Available

Criteria	GoGoCarto	Umap	Ushahidi	Google My Maps
Visibility/ Accessibility				
Mobile version	●	●	●	●
Narration	●	○	○	○
Visual impairments	○	○	○	○
Multilingual	○	~	●	●

Mobile Responsive				
Navigation	★★★★☆☆	★★★★★☆☆	★★★☆☆☆☆	★★★★★★★
Offline access	○	○	~ With smartphone application	○
Adding GPS points	●	~	●	○
Data management	●	○	○	○
Itineraries	●	○	○	●
Hosting / Server				
Data hosting	●	●	●	●
Amount of data	●	~	●	~
Statistics of the accessible site	○	○	●	○
Free of charge	●	●	○	●
Media				
Text content	●	●	●	●
Image content	●	●	~	
Video content	○	●	○	●
Web video integration	~	●	○	●
Data integration				
Customer form	●	●	●	○
Data import	● csv, json	● csv, geojson, kml, gpx, osm, georss, umap	● csv	● csv, kml, xlsx, gpx

Data export	● csv, json, xls, xml	● geojson, gpx, kml, umap	● csv, HDX API	● kml, kmz
Importing live data	● API (url of a json)	● API (url)	● Collection deployed (SMS, Email, Twitter)	○
Symbology / Graphic customization				
Categorization of projects	●	○	○	●
Icons	●	●	○	○
Colors	●	●	●	~
Polygons	○	●	○	○
Map background	●	●	●	●
Getting started				
First use	★★★★☆☆	★☆☆☆☆	★★★★★☆☆	★☆☆☆☆☆☆
Time	★★★★☆☆	★★★☆☆☆☆	★★★★★☆☆	★☆☆☆☆☆☆
Navigation				
Search by location	●	●	○	●
Account	~	~	●	●
User management				
Moderation / Validation of data	●	~	●	○
Account	●	~	●	●
Interfaces according to status	●	○	●	○
Tool license				

Open source tools	●	●	●	○
Data management				
Property	○	● (via framacarte)	○	○
Private data	○	○	●	○
Server location	N/A	OSM Servers	N/A	N/A
Data encryption	None	None	None	None
Privacy Policy	N/A	<u>OSM</u>	<u>●</u>	<u>Google</u>