

TERRAGAZE MOBILE, A GPS-POWERED GEOLOGICAL GUIDE: INFORMATION DEPENDING ON WHERE YOU ARE

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1. Introduction

To the geologist's mind, the landscape comes alive and talk. Every stone, every form of cost or mountain or valley tells its story, evoking the vicissitudes of its history and its becoming.

- Michele Gortani (1956), pioneer of Italian Geology

Every geologist felt the emotion of Gortani's words when interpreting a landscape. Indeed geologists read intriguing stories through the rocks, and understand the millenary processes that shaped the Earth.

Few tourists own the scientific and cultural tools for interpreting autonomously the landscape. Consequently, a question might arise: how to render these emotions during an outdoor geotourist experience?

Traditional media fails to fulfill this target:

- Printed field guides (books, pamphlets,...) provide limited multimedia experiences, as texts and pictures are the only possible media. Moreover, the information is not geolocalized. Indeed books don't provide specific content depending on where visitors are, and what they are viewing;
- Panels indicate geological features on the field, but they invalidate the wilderness of an area and oblige the tourist to visit a defined set of geotopes. Moreover, they represent a notable break in the outdoor experience;
- Museums and interpretative centers provide interesting multimedia experiences and prepare the tourists to the outdoor activities. Nevertheless, they are still indoor experiences and for this reason they lack of the magic of a walk in the wilderness.

2. TERRAGAZE mobile: an overview

The previous point highlighted a gap in outdoor geotourist experiences. Indeed a comprehensive tool for outdoor geotourism is lacking. With this evidence in mind, *TERRAGAZE mobile* has been developed (Baucon & Neto de Carvalho, 2008).

TERRAGAZE mobile (Fig. 1) is a portable multimedia system directed specifically to geotourism and geoscience education. It is a geological guide running on a consumer electronics device, capable of displaying several kinds of media (texts, audio, pictures and animations; Fig. 1a). *TERRAGAZE mobile* is dedicated to outdoor enthusiasts interested in visiting geologically significant locations. It is a great tool to accompany hikers and trekkers, but its flexibility finds use also in cycling and automotive geotourism.

Recently, *TERRAGAZE mobile* has been improved with GPS support. With this technology, *TERRAGAZE mobile* provides specific content to visitors depending on where they are, and what they are viewing.

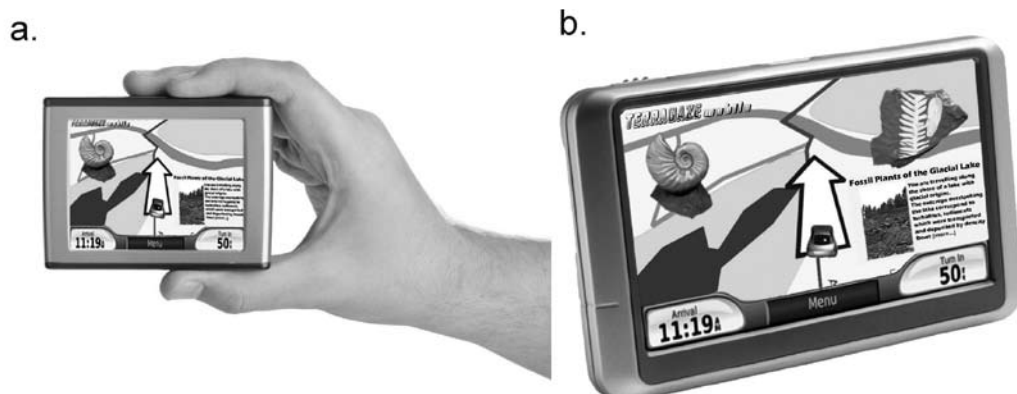


FIGURE 1: TERRAGAZE mobile: a. TERRAGAZE mobile is a pocket multimedia hand. Its technical specifications (width: 120 mm, height: 76 mm, weight: 180 g) make it ideal for outdoor geotourism. b. Close-up of a device powered by TERRAGAZE mobile.

3. Location-based media: specific geological information depending on your position

GPS technology allows precise determining of one's position by accurately timing the signals sent by the GPS satellites high above the Earth.

GPS support allows *TERRAGAZE mobile* to provide relevant information to tourists depending on their location. In other words, specific information (texts, audio files, pictures, animations) automatically begins to play when the visitor pass by a geological point of interest. With location-based media, *TERRAGAZE mobile* creates immersive geotourist experiences and allows geotourists to interpret autonomously the cultural and natural heritage (Fig. 2). Together with this revolutionary function, *TERRAGAZE mobile* offers great tools for route planning:

- It finds the closest geosite respect to the visitor's position,
- geological information is browsable off-place (the visitor can plan its route depending on what features he intends to visit).

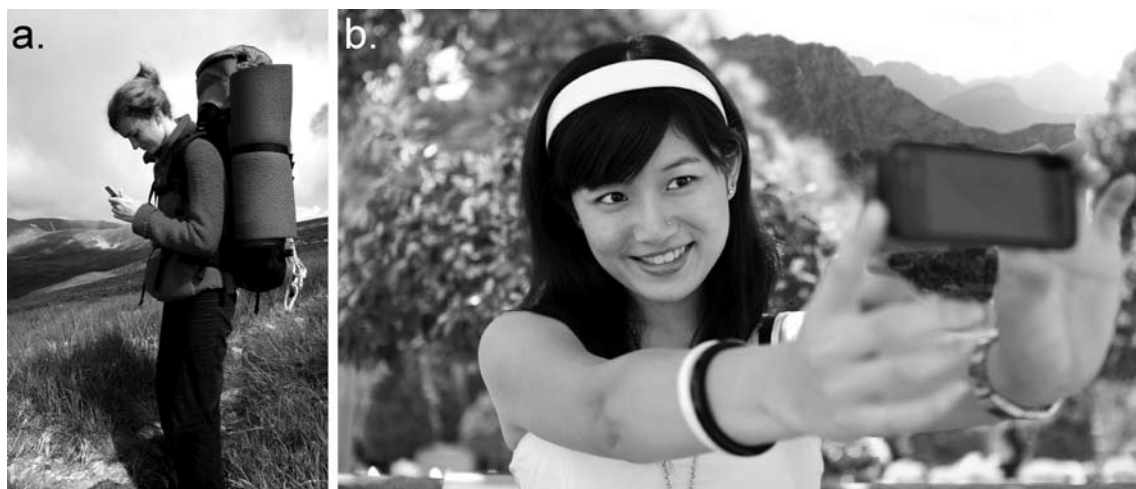


FIGURE 2: TERRAGAZE mobile: the ideal solution for geotourist hiking. a. TERRAGAZE mobile is designed for accompanying hikers through the exploration of the geological heritage. b. With a GPS-powered geological guide in the palm of their hands, visitors receive content tailored to their current location.

4. Realizing a *TERRAGAZE mobile* solution: field data acquisition

Every *TERRAGAZE mobile* solution is specifically tailored to client's Geopark as it represents a custom geological guide. To achieve this result, a detailed geotourist survey is a key-phase in the realisation of a *TERRAGAZE*-powered multimedia guide.

The geotourist survey consists of three phases:

1. Survey design is the key consideration in ensuring a successful geotourist program in any application. All components in the survey are carefully considered, including survey dimensions, geological heritage, project target (i.e. hikers or cyclists), accessibility, geoconservation issues, topography, and other parameters.
2. Data acquisition involves all aspects related to physical acquisition of high-quality geotourist data. GPS coordinates; photos, movies and audio are collected for including in the final multimedia guide.
3. Quality assurance services are rendered in the field for ensuring that all results are of the highest quality before departing the project area. All data are checked and verified to ensure that errors are minimized - thereby maximizing survey value.

Only after field data acquisition, software engineering is performed to develop the final product (more information at www.terragaze.com).

5. Applications

TERRAGAZE mobile delivers all the essential tools for today's field geotourists, including hikers, cyclists, drivers. For instance, the *TERRAGAZE*-powered players attach easily to the stem or handlebars of your bike and they are also designed for various kinds of automotive vehicles (cars, motorbikes, ...).

This section collects a number of such inspiring applications of *TERRAGAZE mobile*:

5.1. Walking with *TERRAGAZE mobile*

Hikers come in the interpretative center of your Geopark where a multimedia guide (powered by *TERRAGAZE mobile*) is given for rent. This is the standard application of *TERRAGAZE mobile*: accompanying hikers and delivering information on the geological heritage of a specified area. With a GPS-powered geological guide in the palm of their hands, visitors receive content tailored to their current location. Walking with *TERRAGAZE mobile* is an intense experience as it is capable of creating engaging activities:

- leading folks to items of interest,
- expanding on various attractions or geosites by running related multi-media audio and picture clips,
- threading stories around exhibits and attractions, injecting them with new energy,
- generating pop-ups indicating show start-times or even cafeteria specials,
- overlaying new tours on existing content to provide fresh experiences thereby encouraging repeat visitors,
- absorbing people of all ages in entertaining contests and games.

5.2. Geological bike tour

It is a leisure travel activity which involves travelling by bicycle and exploring the geological heritage of your Geopark (Fig. 3).

The idea is to rent out bicycles equipped with *TERRAGAZE mobile* and deliver to your visitors an exciting mixture of outdoor sports, geotourism and innovative technology. With GPS-support, *TERRAGAZE mobile* provides site-specific information. Imagine: when the cyclist crosses a geological point of interest, relevant information (texts, audio and visual data) is automatically displayed. A great way to diversify your tourist offer and attract new tourists to a Geopark.

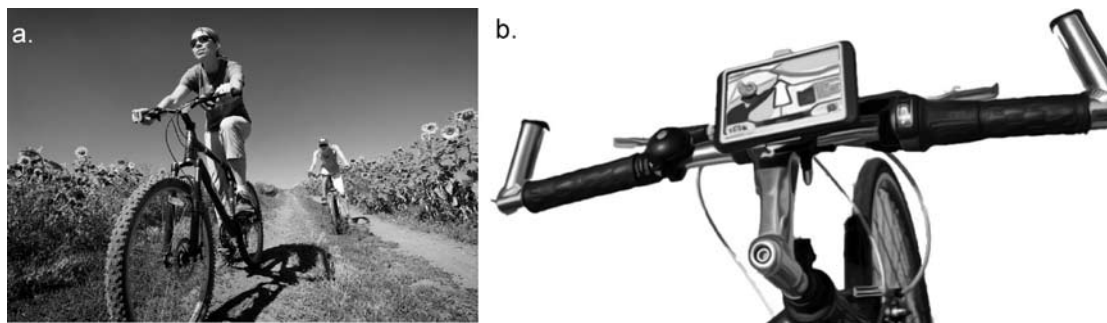


FIGURE 3: TERRAGAZE mobile and cyclotourism. a. Geological bike tour powered by TERRAGAZE mobile.

b. TERRAGAZE mobile attach easily to the stem or handlebars of bicycles.

5.3. Geologic location-based games, geocaching and alternate reality games

A location-based game is one in which the game play evolves via a player's location, turning the entire Geopark in a gigantic game board. For those who are familiar with videogames, imagine to play "the Secret of Monkey Island" in the real world.

How does it work?

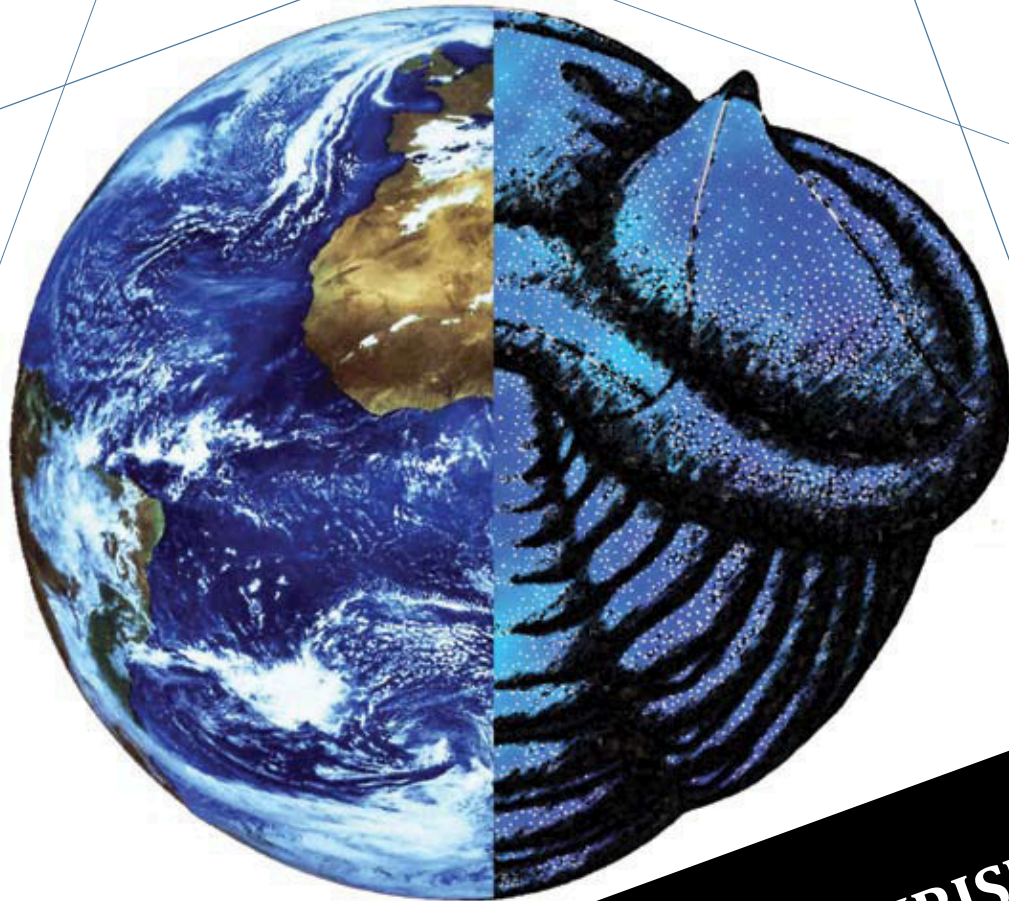
Imagine to play a high-tech treasure hunting game where clues are given by the *TERRAGAZE mobile* unit. For instance, the "treasure" could be a geomonument to find by solving geological riddles and quests. Create interactive narratives that use the real world as a platform to tell a story that may be affected by participants' actions. You can even set the story in the Ice Age: for instance, when the player reaches a moraine, *TERRAGAZE mobile* displays that place 10.000 years ago.

With this concept in mind, *TERRAGAZE mobile* could be also used for Geocaching, a game played throughout the world by adventure seekers equipped with GPS devices.

With *TERRAGAZE mobile*, creativity is the only limit!

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NEW CHALLENGES WITH GEOTOURISM

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