

TAKING
COOPERATION
FORWARD



Webinar - SUSTAINABLE TOURISM IN PROTECTED AREAS, FROM DESIGN TO IMPLEMENTATION - THE EXPERIENCE OF CEETO PROJECT

8th May, 2020



Nirano's Mud Vulcanos: Identifying visitor's profile with artificial intelligence



Rudy Melli - CEO and Co-founder at Vision-e Srl, Italy, Head of the VCA system

Chiara Rognoni - Referent CEETO Project in "Emilia Centrale" Parks Authority





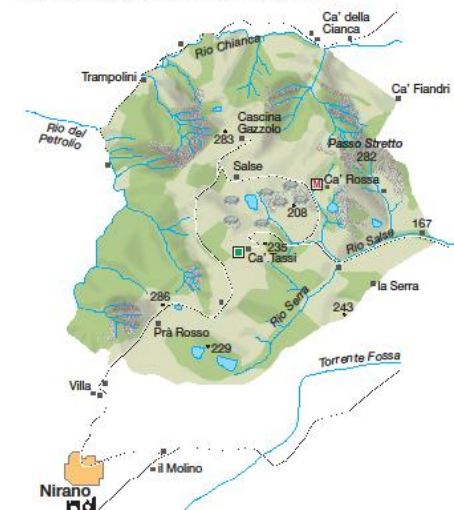
The “SALSE DI NIRANO” Nature Reserve was selected for the implementation of the Interreg CE Project CEETO

→ characterized by

- high level of enjoyment by visitors throughout the year
- unique and delicate area



Riserva naturale Salse di Nirano



Legenda	
	Centro abitato
	Calanchi
	Centro visita Ca' Tassi
	Edificio religioso di rilievo
	Edificio storico di rilievo
	Prati e coltivi
	Boschi e arbustati
	Salae





1. CONSERVATION AND PROTECTION OF THE RESERVE IN PARTICULAR ZONE A → Analytically study the attendance of the reserve in-depth

- How many people attend it and in what period?
- There are preferred observation point unknow and/or outside paths?
- Intrusions. Where, when and entering way?

The Video Content Analysis (VCA) system based on AI can monitors transits along the access road, and the whole area, of people, vehicles and animals

2. ENVIRONMENTAL EDUCATION FOR SUSTAINABLE TOURISM within varied and well structured offer of educational activities for school, families, association

- Open day on 1 September 2019 in collaboration with the Municipality of Fiorano Modenese and local Associations, including a guided tour
 - Making visitors responsible for their own behaviour by providing them with adequate information on the correct rules of conduct
 - The protection and conservation of the local environment and landscape



The present experimentation is probably an absolute first as far as the application of the methodology at the level of Protected Natural Areas is concerned





VIDEO Features



NEMOS

Nature rEserve MOnitoring System
Monitoring, Protection, Development



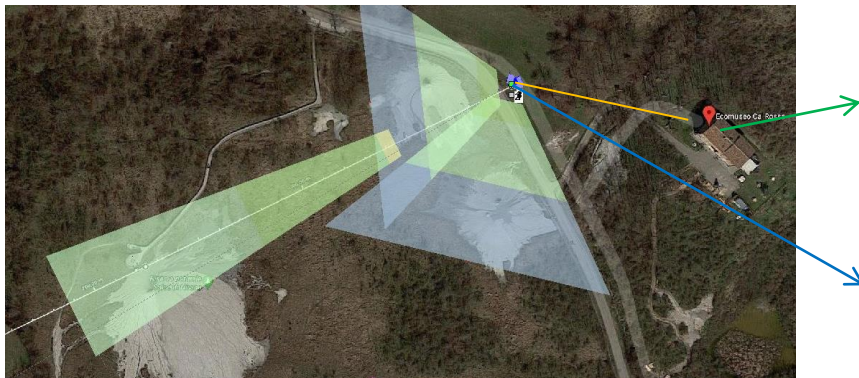
VIDEO NEMOS



The Video Content Analysis (VCA) system is called **NEMOS: Nature rEserve MOnitoring System**, use state-of-the-art **Artificial Intelligence** algorithms and can automatically **identify, distinguish and count** vehicles (cars, bikes, motorbikes, ..), pedestrians and animals divided by species (horses, cattle, canids, ..) and collect its position in the area.

These data can improve the knowledge of managing authorities about the tourist presence and behaviours, with the purpose of planning suitable activities to steer the behaviour of visitors that access to the whole area → This will contribute to preserving its unique and fragile landscape

- A. **Stakeholders involvement.** Active collaboration of the Municipality of Fiorano Modenese as owner and manager of the Cà Rossa Visitor Centre. The system was initially planned to be installed at Lake Pratignano (High Modenese Apennine Regional Park) but was not possible for reasons of ownership
- B. **Design monitoring.** What to monitor and where to place the cameras
- C. **Define appropriate collection period.** Statistical evaluation requires months of data
- D. **Installation of cameras and processing unit, laying network cables.** Low power energy design → installation in remote locations with photovoltaic panels & GPRS/3G/4G link
- E. **Communication** about the presence of the VCA system, illustrating its purpose and operation, through the use of promotional videos and dedicated initiatives
- F. **Data analysis** to give the right interpretation and use
- G. **Allocation of budget available** also for maintenance over time and to implement new features and needs for surveys in line with educational activities and research

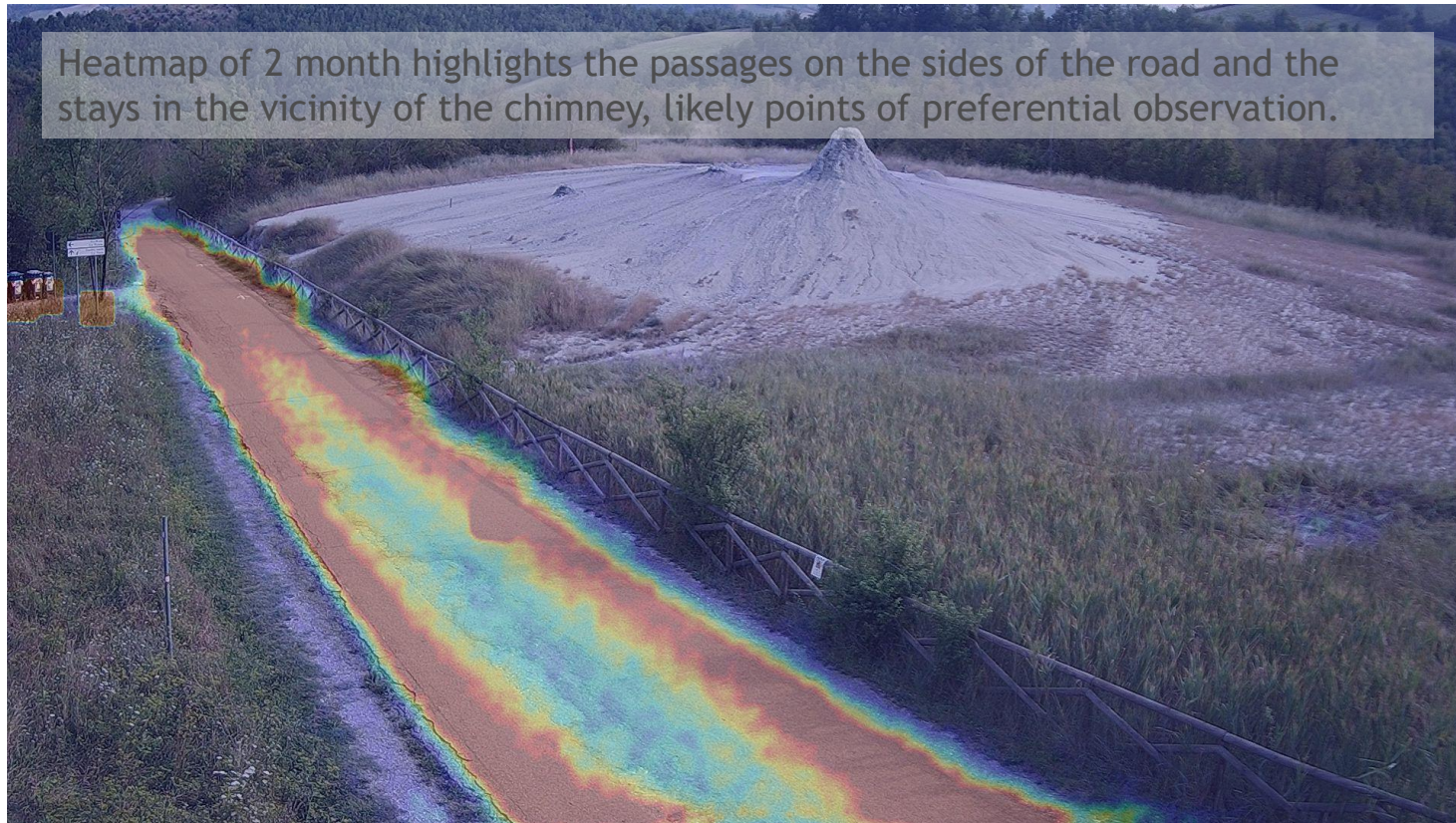




Communication and Environmental Education Plan Using heatmap it possible to identify the best spots where positioning information material, or differentiate the location and the type of message/signage to be affixed based on visitors routes and stops.

Monitoring the presence (number) of excursionists in the area, vehicles, animals and its position through heatmap

Heatmap of 2 month highlights the passages on the sides of the road and the stays in the vicinity of the chimney, likely points of preferential observation.



Monitoring the main threats to the integral protection zone by fence crossing excursionists, and planning the right countermeasures to obstacle this behaviour safeguarding the natural assets

- Heatmap highlights the most used intrusion points
- Study a suitable signage that tries to **dissuade** intrusion actions
- ➔ monitor if the intrusions decrease after the action





The system can collect long period time lapse (months, years) and used as “Time Machine”, functional:

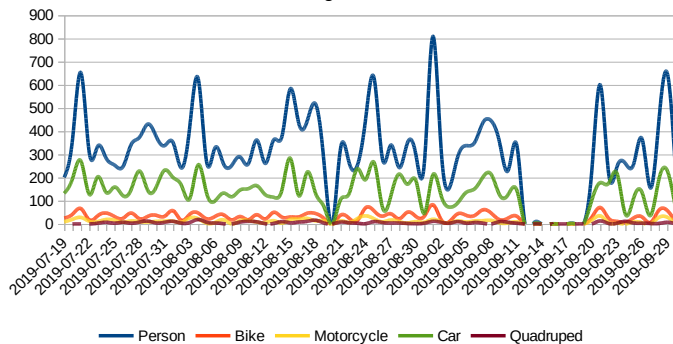
- To the analysis of seasonal evolutionary reconstruction of the landscape and of the morphologies of the mud volcanoes
- To other research projects carried out by other Authority and/or in collaboration with the University,
- Create educational videos to be made available in the visitor centres informing and showing the evolution of the geomorphological aspects of the Nirano’s Mud Vulcanos over time



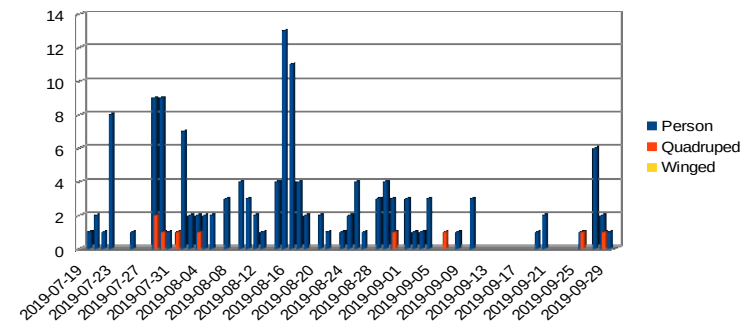


- Starting from the data analyzed, devise visit routes and/or observation points that allow the visitor to behave more consciously and responsibly with regard to the rules within the Protected Area
- Integrate the planning of annual initiatives of the Reserve taking into account the statistics data about presence and preferred point of view to promote initiatives/guided visits in a more targeted way.

Counting Camera 1

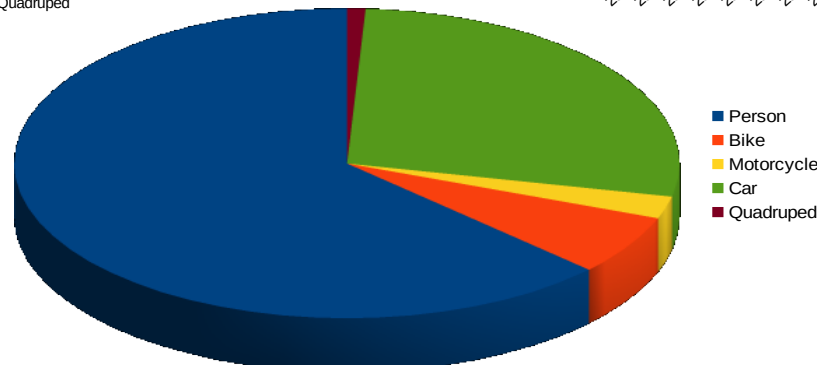


Intrusions Camera1



Analyze the entire data collected with **advanced filters** of time (date range, days of week, hours range), type of detections (person, vehicle, animal), intrusions
 → For both Counting and Heatmap

Class distribution Camera1



- This pilot action of CEETO Project was part of the process of applying for obtaining the European Charter for Sustainable Tourism (ECST)
- Activating paths of collaboration with Municipality and Stakeholders is strategic and fundamental.
- The in-depth analysis of the local situation provided by NEMOS system is an approach that can lead to sustainable tourism and ongoing projects with research institutes
- The experimentation can be adapted and replicated over time and in other areas.



**THANK YOU
FOR YOUR ATTENTION**

#52212043

For more info

Rudy Melli - melli@vision-e.it (www.vision-e.it)

Chiara Rognoni - chiara.rognoni@parchiemiliacentrale.it