Tools and Methodologies for Visitor Monitoring

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VIMOMA

Balancing Conservation and Visitor Satisfaction

Visegrad Fund

Grant agreement No 22210176
Experience design and nature conservation via VIsitor MOnitoring and MAnagement in protected areas

Visitor-Monitoring Techniques

Diverse methods on:
visitor
numbers
behaviors
impacts

Managers:
valuable insights into visitor dynamics
evaluation of management strategies
informed decision-making

evidence-based decisions
adaptation of management approaches

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1. What to quantify?
visitors, visits, visitor days, …

2. How to conduct counting?
direct, indirect, automated, …

3. What sampling strategy?
entrances, centers, attractions, remote areas, …

4. How to estimate total visitation?
based on counted visits, on other objects, …

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Spenceley et al. 2021

different methods = different strengths and weaknesses

direct	• counts relying on researchers directly counting • observations are made at the site, or observing video camera recordings or using observation from the air
indirect	• inferred counts to provide on-site estimates • options include counting fees (parking/entrances), permits/licences, guests records at accomodation, entries in guestbooks, trail logs, signs of use and social media posts
automatic	• counts with mechanical and/or electronic devices of the numbers of visitors on-site • counters include traffic counters, and turnstiles of video counters

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Manual Counting, Field Observers

\+ easy, no specific equipment

quality information (gender, age, …)

spatial distribution

\- influence of weather and other events

it highly depends on the applied method and from the quality of work provided by the person on site

expensive if on a big scale and if repeated over the year

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Automated Counters

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+

gives global trends overtime

impact of the weather and seasonality detected accurately

suitable for long-term counting

access to remote sites

robust, resistant, descreet (can be hidden, waterproof)

user-friendly application for data management

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precise instalation on proper site

need of counter calibration

price, battery replacement

regular check and service needed (data download, vandalism)

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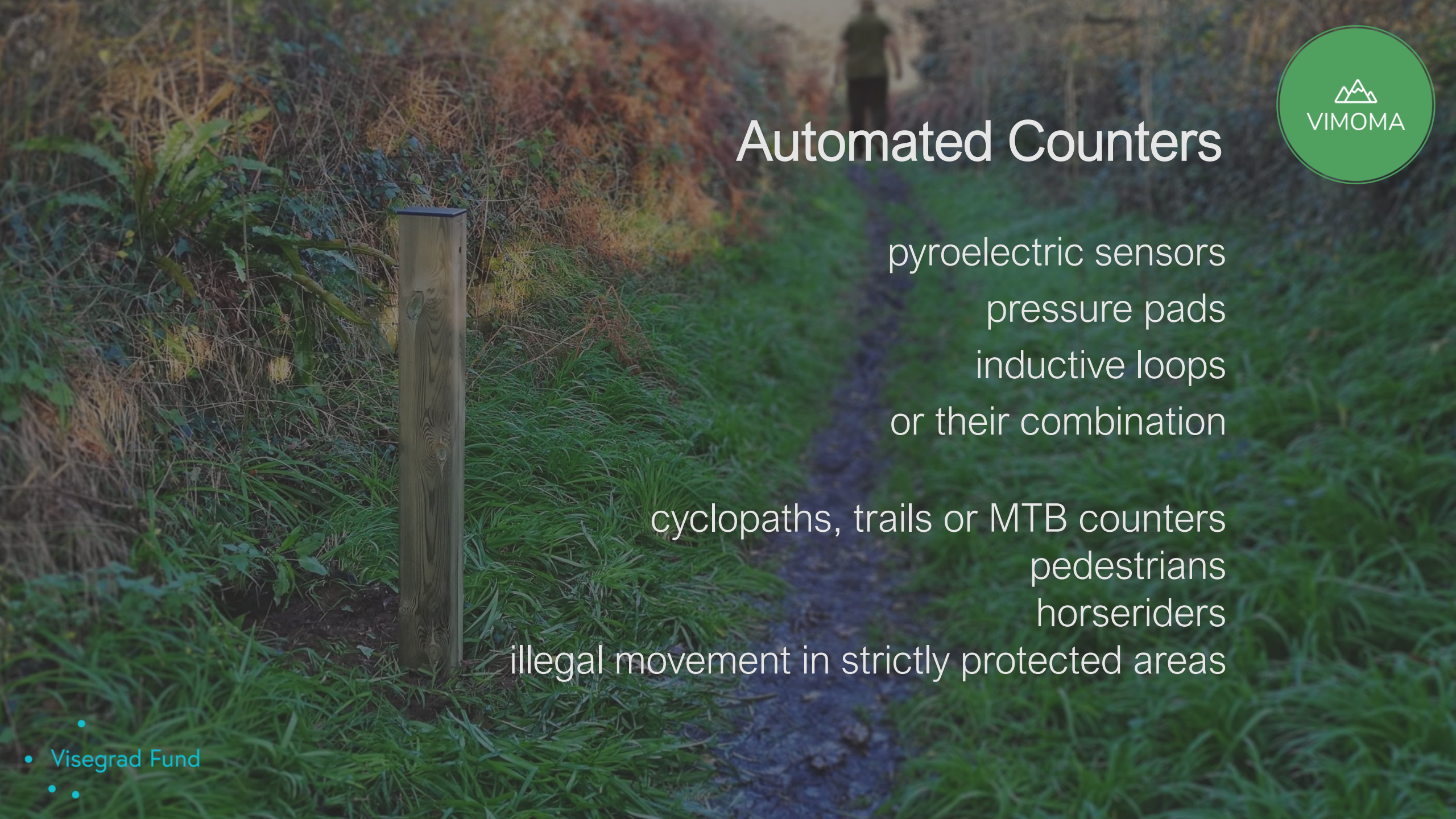

Automated Counters

pyroelectric sensors
pressure pads
inductive loops
or their combination

cyclopaths, trails or MTB counters
pedestrians
horseriders
illegal movement in strictly protected areas

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Remote Sensing

Air photos or other imaging, by plane, satellite, drone

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\+

can cover large areas, and be regularly repeated

offers a different perspective (can collect valuable data on visitor behavior, use patterns, and environmental impacts)

can be associated with other monitoring purposes

e.g. LiDAR (light detection and ranging) for monitoring visitor volumes and suggests alternative destinations during peak occupancy

\-

good for open spaces only, subject to weather conditions

only offers a snapshot in time, expensive for long term needs

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Camera recordings

film/video onsite and visitor-count carried out when returned or transmitted to base

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\+

valuable data on visitor behavior, use patterns, and impacts

accurate, flexible and mobile, can allow visual interpretation of visitor characteristics

Motion-triggered recording or time-lapse video

alternative to direct observations for calibration of other counts

−

vulnerable equipment to use and maintain

staff time needed to interpret films

not a long-term option at unattended sites

less feasible away from permanent sites

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Social Media Analysis

geotagged posts, hashtags, comments, …

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monitoring and addressing real-time events

visitor satisfaction levels, identify popular attractions or activities

identification of visitor hotspots

helps in detecting potential impacts of visitation

data for studying visitor behavior and understanding their motivations and activities

+

monitoring of prohibited activities

setting up visitor flow management

enables timely updates, alerts, and the dissemination

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Mobile Applications

park-specific apps

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engage visitors directly and provide a range of features to collect data

real-time data on visitor numbers for understanding visitation flows

valuable insights into trail usage and visitor distribution

\+ managers gain insights into visitor preferences, popular activities, and the usage of different trails or facilities

can facilitate visitor participation in citizen science initiatives

visitors can report environmental observations or wildlife sightings

include mechanisms for visitors to provide feedback, opinions, suggestions

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Mobile Applications

park-specific apps

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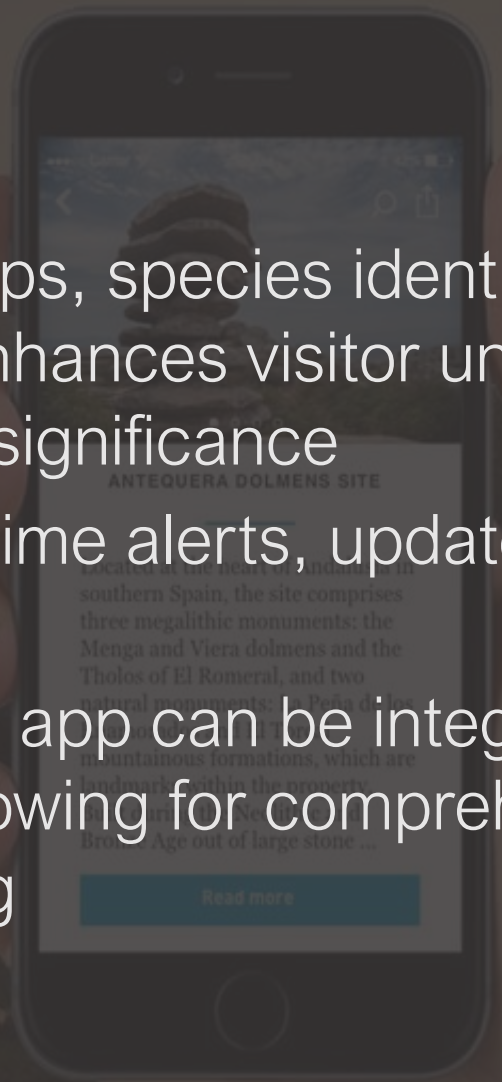

can include interactive maps, species identification guides, or multimedia content that enhances visitor understanding and appreciation of the area's significance

\+ can be used to send real-time alerts, updates, and safety information to visitors

data collected through the app can be integrated into visitor management systems, allowing for comprehensive data analysis, visualization, and reporting

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Crowdsourcing

information, opinions from a large group of people who submit their data via the Internet, social media, smartphone apps

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+

allows visitors to report their observations of wildlife, rare species, invasive plants, or environmental disturbances

engages visitors as citizen scientists, enabling them to actively participate in scientific research and monitoring projects

can be utilized to collect information on trail conditions, infrastructure maintenance needs, or potential safety hazards

real-time data allows to prioritize maintenance and repair tasks

enables visitors to provide feedback, reviews, and suggestions

can involve visitors sharing their stories, photographs, or experiences

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Practical implications

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Data analysis and interpretation + Data and system management

Statistical analysis identifies patterns, trends, and relationships in visitor data

Data visualization techniques communicate complex visitor data effectively

Spatial analysis including GIS, examines visitor data in relation to the physical landscape

when stakeholders are presented with clear and visually compelling data, it fosters collaboration, shared understanding, and collective problem-solving

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Define your goals and objectives

Start by clearly defining the goals and objectives of your visitor monitoring program. What do you want to achieve through the program? What information do you need to collect to achieve these goals?

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Select appropriate monitoring tools

Choose technology-based tools that are appropriate for your specific needs and goals

Develop a data management plan

Develop a plan for managing the data collected through the monitoring program. This should include protocols for data collection, storage, analysis, and interpretation

Train staff

Ensure that staff are properly trained on how to use the chosen technology-based tools and how to follow the data management plan

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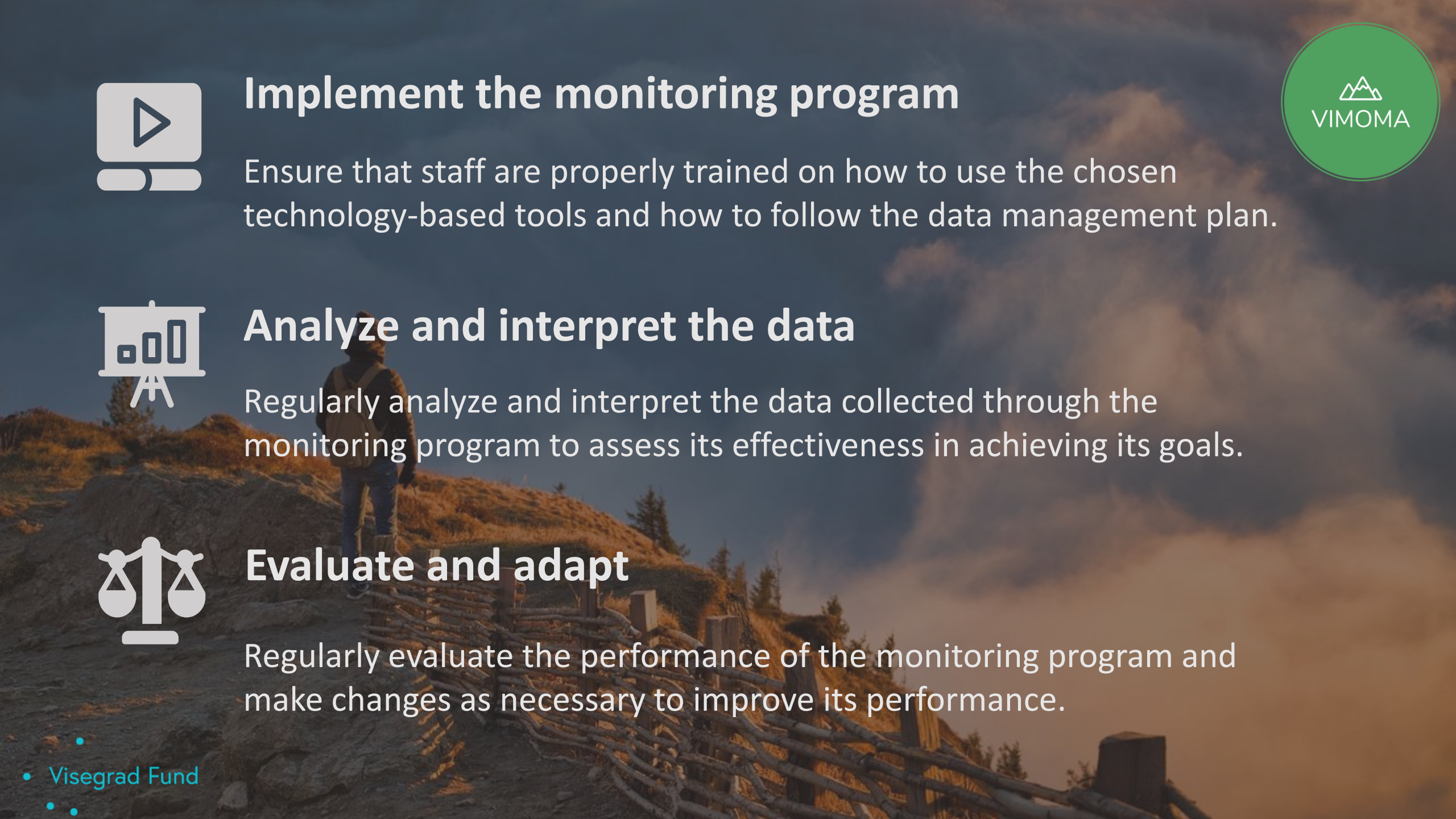

Implement the monitoring program

Ensure that staff are properly trained on how to use the chosen technology-based tools and how to follow the data management plan.

Analyze and interpret the data

Regularly analyze and interpret the data collected through the monitoring program to assess its effectiveness in achieving its goals.

Evaluate and adapt

Regularly evaluate the performance of the monitoring program and make changes as necessary to improve its performance.

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Ensuring Effective Visitor Monitoring

Careful selection of technology-based tools

Robust data management protocols

Comprehensive staff training

Regular evaluation and adaptation

Stakeholder engagement and collaboration

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