

# CAVE 4.0

Self-guided adventure tours in show caves and show mines

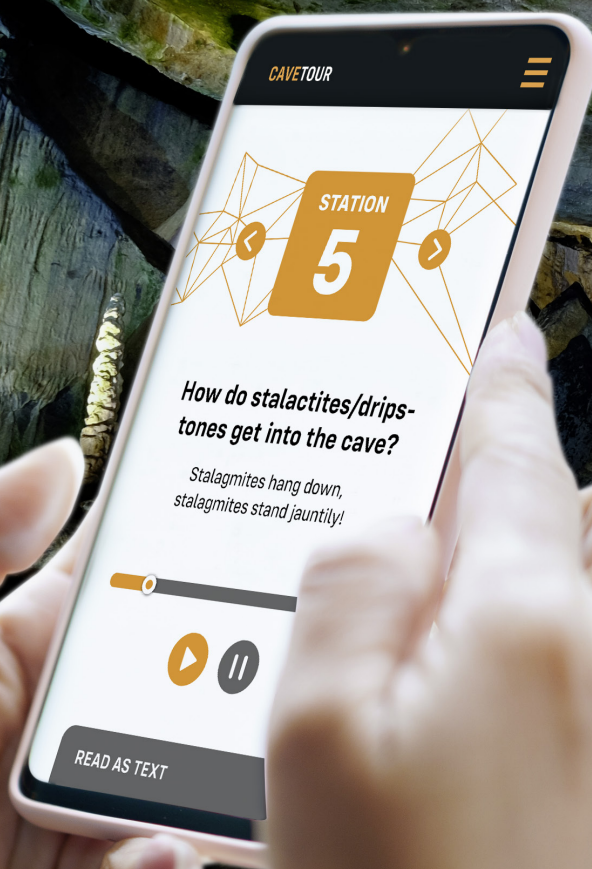
Intelligent light and audio control

Guidance and traffic light system

Safety and hygiene compliant

Control the number of visitors

Smart guiding with electronic markers





## Two steps ahead: Give your cave an update!

Descending into the depths, discovering a completely different, unknown world for once - that can become the highlight of any vacation.

But how could operators make their caves even more captivating that they attract new visitors in the future and drive them to want to experience the world of caves?

We would like to present to you, Cave 4.0. Our new control system bringing fresh, socially aware concepts to cave tours.

Self-guided adventure tours that are digitally accompanied could also be an exciting new format for your facility, making your offering more attractive, more diverse, more flexible and future-proof!

### Advantages at a glance:

- ✓ Self-guided exploration for individuals and small groups without guidance and time restrictions as an alternative format to conventional guided tours.
- ✓ Reduction of operating, personnel and energy costs
- ✓ Hygiene and interactions of groups can be better controlled and observed.
- ✓ Visitors can be safely guided through the cave with different lighting scenes and automated video and audio guiding.
- ✓ Reduction of lamp flora and harmful environmental effects on employees, e.g., in radon-contaminated caves.

# How do you guide individual visitors through the various locations of your own facility in a targeted, effective and safe manner?

This is where Cave Lighting can bring its expertise into play.

## Light as your guide

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Light is one of the most natural guiding tools for humans. When in doubt, people walk along the brightest path instinctively. Targeted lighting can therefore play a key role in helping visitors find their way around show caves and mines on their own. Instead of illuminating a facility completely and uniformly, visitors can be guided through the spaces by different light signals. For example, different areas being lit at overlapping times to instinctively guide the public to follow. Particularly in larger spaces, lighting that is coordinated with direction guidance can ensure groups remain together, which is harmonious with highlighting specific Points of interest.

## Audioguide

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Already commonplace in many museums, self-guided tours can also be accompanied by an audio guide. Built into your new cave app an audio guides can be quickly downloaded onto any smartphone. Allowing more languages to be supported for increasing visits. One way they could be used within your space is having self triggering audio guides when guests are using the app. Using intelligent triggers placed throughout the space, these can communicate information with individual visitors.

## Intelligent control

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Individual Lighting and Sound solutions can best be realised as a collective unit when thinking about using Lighting as a guiding tool. For instance, the soundscape can subtly create a loop with a natural end whilst the lighting directs you to the next zone, creating a human centric control system. By zoning your space and running a human centric control system you can operate high and low season programs which additionally reduce energy consumption and reduce cave lamp flora, as well as supports much better socially aware control of all visitors.

## Environment-friendly and budget-friendly

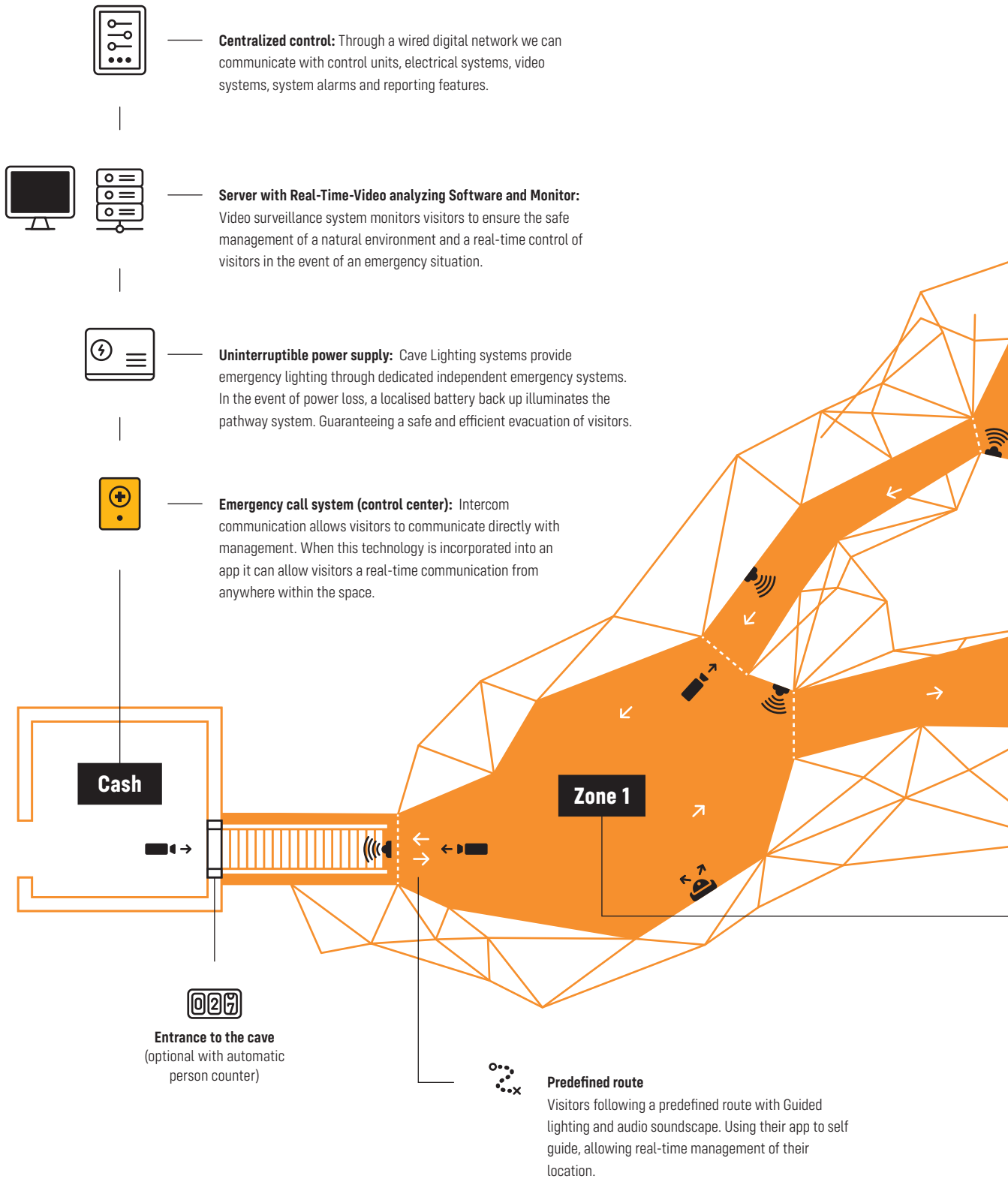
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With modern, intelligently controlled lighting systems, energy costs can be significantly reduced thanks also to energy-efficient LED technology. The environment also benefits from modern lighting systems that don't have unnecessary generic illumination.

Especially for individual tours or smaller groups, the duty cycle of the lamps can be significantly reduced, which can also contribute to a reduction in lamp flora.

# Tours without cave guide

## Conceptual model (simplified)



# Intelligent control



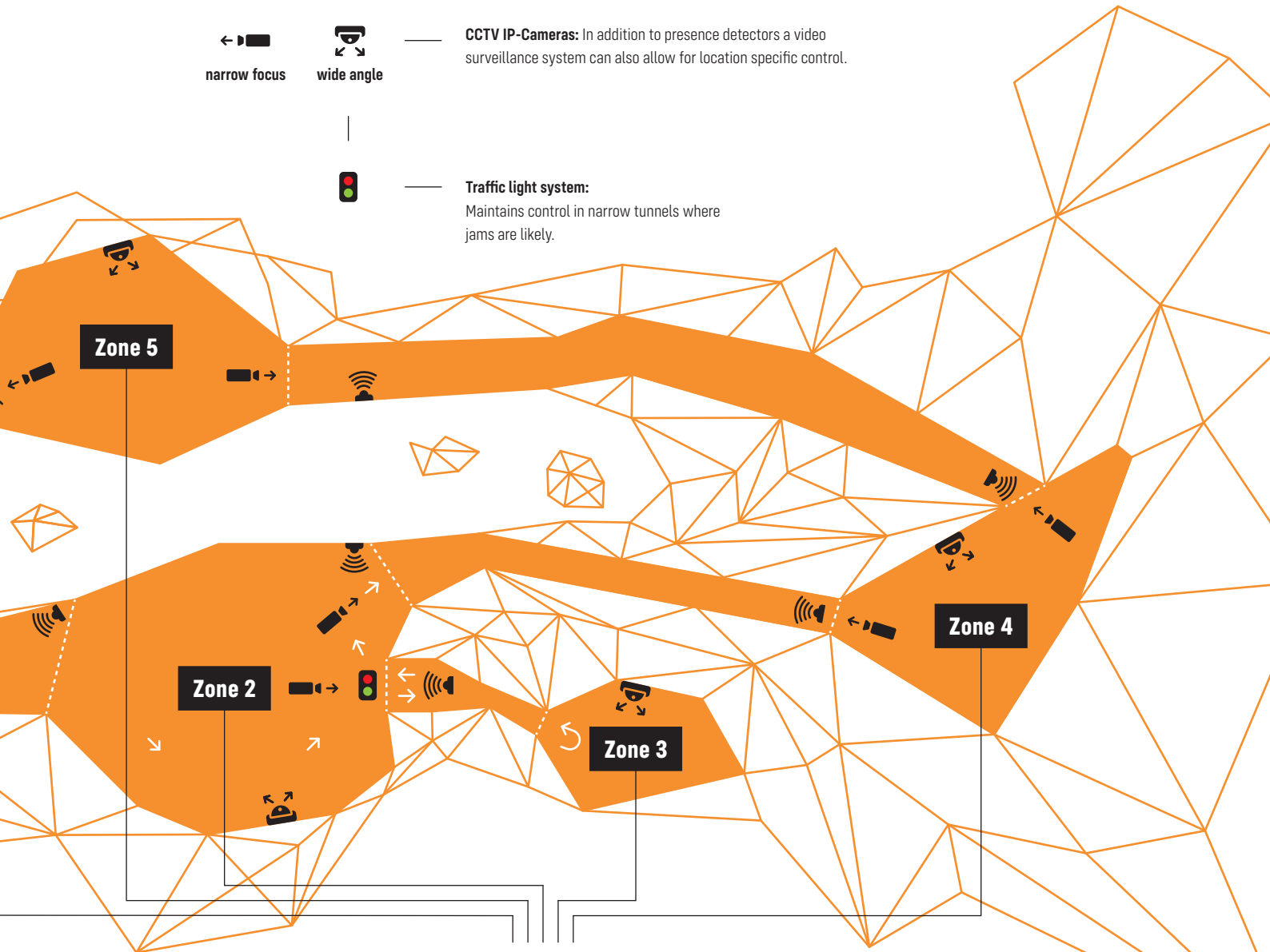
**Microwave presence detectors:** Control the complete system by registering visitors specific location with the space.



**CCTV IP-Cameras:** In addition to presence detectors a video surveillance system can also allow for location specific control.



**Traffic light system:** Maintains control in narrow tunnels where jams are likely.



### Subdivision into zones:

Particularly in the case of self-guided tours, it is useful to divide the spaces into different zones that can be controlled separately. This way, only areas where visitors are located are illuminated, allowing for effective guiding. Moreover, the using of dynamic lighting keeps the total amount of light needed at a lower level, which not only reduces operating costs, but is also more environmental-friendly.



**Switching cabinet**  
for electronics



**Switching Point**  
controls light and music



**Emergency call system**  
(Help Point)



## Passionate about caving

As a team, Cave Lighting brings together over 100 years of experience with the underground world. Show caves are our profession. Whether as passionate nature lovers, experienced cave explorers, trained engineers or creative lighting designers, together we bring the expertise to effectively consult and support you through every phase of your project.

We can take you from the initial concept through the planning and implementation to completion and maintenance of your project. We can also plan, implement and provide long- term support for the construction of GRP guideways.

## Dare to take the first step

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Make your space more diverse, attractive, flexible and future-proof with Cave 4.0. From planning to implementation - we will be happy to advise and support you with our expertise in the realization and design of your new digital offerings.

### Contact

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**Cave Lighting CL**  
GmbH & Co. KG

Hohe Straße 700, Gebäude 7  
35745 Herborn

Tel. +49 27 72 / 57 52 18  
Fax +49 27 72 / 57 52 20  
Mobile +49 171 / 7 22 82 01

info@cavelighting.de  
www.cavelighting.de

