

Cave permit software: TRIPMan – design and development

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Introduction

If you are the manager of a karst area with caves and visitation levels that have an impact, then you need to consider the possibility of Cave Permit Systems.

Considerations on the pros and cons of using Cave Permit Systems will not be discussed here but if your analysis shows that a Cave Permit system is a viable option for your karst area then one of the things you are going to need to examine is the possibility of using Cave Permit Software.

If the visitation levels are at such a level that it is likely to become difficult to keep track of any of the following:-

- the permits that have been issued,
- setting visitation limits – trips/week, trips/annum, maximum party size
- sectioning caves with different visitation levels to each section
- specific visitation conditions for one or more caves
- managing the leaders details and first aid expiry details
- the party members experience levels
- managing permit fees collected
- documenting the trip reports that have/have not been submitted
- producing a range of reports listing leaders, caves or areas visited

then Cave Permit Software should be a serious consideration.

If the possibility of designing and developing your own software is not something that your company or organisation would be likely to undertake then the other option is to examine systems that have already been designed and built.

This paper describes the design and available options for the TripMan – Cave Permit Software – V1.00.

The Design

Basic Requirements of the Software

The system has been designed to allow the printing of an authorised permit for a leader, to visit a maximum specified number of caves over a range of dates, specifying all party members with suitable experience levels.

The software was designed to allow the system to be hosted locally on an Intranet or remotely over the Internet. It was also designed to allow three levels of access to the system. The three levels are:

1. Administrators
2. Management Staff
3. Cave Leaders

Administrators have full access to the system allowing the addition of new caves or sections of caves, karst areas, Permits, Party Members and all system configuration options.

Management Staff can have a variety of access depending what is required by the Management Agency. The Management Staff menu can be customized to provide access to any of the menu options that exist in the full Administrators Menu. Generally the Management Staff would perform the majority of the functions of the Administrators but cannot authorise permits.

If the system is set up so that the leader's menu can be accessed from the Internet then Cave Leaders can submit an application for a permit, add party members, modify existing permit applications (if they have not been approved), and determine the status of a Permit Application.

The system can be setup on an Intranet and in these circumstances Cave Leaders would be required to submit a hard copy permit application and Management Staff would be required to add the application to the system.

What does it look like?

The look and feel of the software is of a menu driven window, which creates windows that request the required information to generate permits that are printed from standard browser windows.

The login screen is shown in Figure 1 and the main menu with the extended cave and karst area menu is shown in Figure 2.

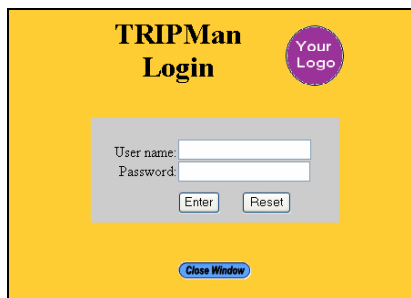


Figure 1

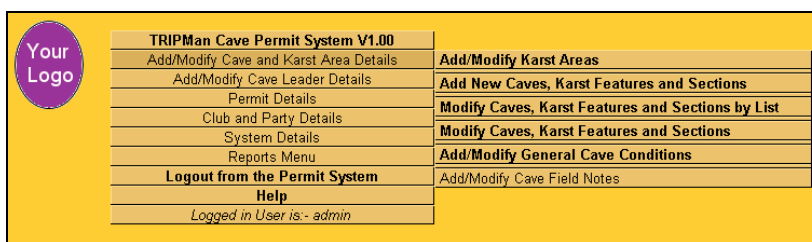


Figure 2



Figure 3

An extensive context sensitive help system has also recently been added to the software (See Figure 3 for the main linked page – which is accessed from the Main Menu).

Help buttons appear on almost every window and can be used to obtain help specific to the information being requested or displayed in that window.

Management Principles Applied by TripMAN

If a permit system is applied to caves or karst features in a region then it is likely that restrictions may be required on the visitation levels to specific caves, sections of a cave or a karst feature. The TripMAN software allows the following restrictions to be applied at the cave or karst feature level.

1. Total number of visits per annum

2. Total number of visits per week
3. Number of visits per day
4. Maximum party size (minimum set to 2)
5. Booking Type (AM/PM/DAY)

The software does not allow permit applications to be created if the Total number of visits per annum is surpassed by the creation of a new permit application. The Total number of visits per week and per day are controlled by the calendar which allows the booking of the cave. Once the Total Number of visits per week is reached then the days surrounding the bookings for a week or day cannot be selected.

The Maximum Party Size is enforced by TripMAN when the permit application is created or modified. This party size cannot be exceeded when creating or modifying a permit application.

Other restrictions such as not allowing the same Leader to book the same cave multiple times thereby using all available bookings for say one year are not applied. If such restrictions were

required they could readily be incorporated into the software.

Other Management Data Stored by TripMAN

Another piece of management data stored by TripMAN is the cave classification for each individual cave or section of cave. This classification generally refers to the type of access that is allowed to a cave or section of cave.

For example it may require that cavers have a specific qualification or skill, or it may indicate that no permit is required for this cave or section. At present TripMAN does not apply any restrictions on permits based on this cave classification field.

Such restrictions can readily be applied by requiring that Leaders hold specific certification to access caves with specific classifications. The TripMAN software will allow such restrictions to be applied in the future.

The Cave table also stores data such as the length of the cave, the vertical extent of the cave system, the name of the controller and a long description of the cave or section. Producing reports based on this data is also a future option for TripMAN.

TripMAN's Data Tables

The major data tables used by the TripMAN software include tables which hold data relating to the following:

- Leaders
- Caving Clubs
- Karst Areas
- Caves
- Cave Conditions
- Cave Field Notes
- Permits
- Permit Caves
- Party Members
- First Aid Certificates

The current software maintains the following minimum level of data for each of the following tables.

Leader Table

Name, Address, Telephone, Email, First Aid Certificate ID, Date of Birth, Certification

details, Online Username and Password, Caving Club, Club Membership Status, Financial Status and an Active Flag for the TripMan software.

Caving Clubs Table

Club Long and Short Names, Address, Contact Name, Telephone, Fax and Email.

Karst Areas Table

State Codes, Area Code and Area Description

Caves Table

Area Code, Cave Number, Section Number, Feature Name, Trips per Annum, Trips per Week, Trips per Day, Maximum Party Size, Booking Type, Long Description and Key information or PIN Code

All of the data for these tables is entered into the system via a web browser interface either on an Intranet or via the Internet. Additional features can be added to the system at the request of licence purchasers of TRIPMan.

Hosting and maintenance of the software can be conducted by licence purchasers of the software on their own website or it can be hosted and maintained by the supplier WebSolutionsWA Pty Ltd. Data entry can be via a secure website using SSL if required.

Installing and Accessing TRIPMan

On-line or Stand Alone

The system can readily be used on-line via the WebSolutionsWA web site or provided in a package to be installed on any stand alone PC running Microsoft's IIS V5 or better web server. The software is written in a combination of ASP and Java script and is provided in a compiled format. The stand alone version has only been fully tested with Microsoft Windows XP Professional. The IIS V5 web server will also run on Windows 2000 and some successful testing has been undertaken in this environment but the TRIPMan software is not recommended for Windows 2000.

The browser interface to TRIPMan currently only supports Internet Explorer 6 or better. It has also been alpha tested on FireFox 1.0 but several critical features, including the popup calendar used by TRIPMan, are currently not supported by this browser.

If Leader access is required for the submission of Permit Applications then a website on the Internet is required. This can be hosted by WebSolutionsWA or by the purchaser's web hosting company.

The Future

The TripMAN software has a number of data tables that have not yet been utilised in the development of Version 1. However it is envisaged if the software becomes more widely used then these additional tables and features can be build into the TripMAN software.

Permit Charges and Accounting

The system has been designed to allow for charging a fee for the costs associated with the maintenance of a Cave Permit System. The current system details contain values for a Cost Per Permit, a Cost Per Cave and a Cancellation Fee. These values are not used in the current version of the software but it is planned to add the code to apply these fees if they are entered into the system details. If a Cost Per Cave is entered then a Cost Per Permit would not apply. The Cancellation Fee can be applied also if specified in the system details.

The Leaders table also contains a field to hold any credits/debits that Leaders may obtain by overpaying Permit Fees or receiving credits if Permits are cancelled, and fees have been paid, prior to the implementation of any Cancellation Fee's. Future Permits would use existing credits prior to requesting any further permit fees.

The overall system would not allow the printing of a permit without the Permit fees being paid.

Reporting options would also be created for the accounting side of the permit system. Generating reports such as Permit fees collected during a specific period, Permit fees collected for specific caves and a report of outstanding fees.

Cave Management Prescriptions

One example of a proposed extension to the TripMAN software is the integration of Cave Management Prescriptions (Webb, 1999). These prescriptions can be time consuming to write, so the software has been designed to easily allow the selection of cave management sub-factors for each cave. The software would then be able to generate a generic management prescription, which may

then need to be customised to match the specific sub-factors found in each cave or section of cave. This feature would provide considerable benefit for both managers and caves in the management of Cave Management Prescriptions.

The field notes for each cave would then automatically provide warnings or make specific requests regarding conservation issues within a cave or section of cave. The software could then also be used to apply prescription requirements such as "no access to a certain section of cave in January or February" which may be a bat's critical breeding time.

Conclusion

The use of the TRIPMan software will provide management authorities with easier processing of permit applications and ensure that relevant management principles are applied to each permit application. The software also allows for the logging of trip reports against each permit with a report advising those permits where no trip report has been provided.

The future enhancement and development of the software should provide greater assistance to management authorities as they attempt to manage more resources with less and less staff.

Acknowledgement

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Reference

Webb, R., 1999 Progress in Cave management Prescriptions – An alternative to Cave Classification Systems, in Henderson, K., and Bell, P., (eds.) *Proceedings of the Thirteenth ACKMA Conference, Mount Gambier, South Australia, April 1999*, Australasian Cave and Karst Management Association.