

# **DIGITAL ATLAS OF CHILE, DESIGN AND IMPLEMENTATION**

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## **ABSTRACT**

The main objective of this project is to implement an electronic atlas that will be available through the Internet. For the performance of educational functions and the development of new (computer) technology in education it would be feasible and useful to introduce a Digital Atlas into the educational system of Chile. This will help children and students by providing fascinating information about the geography of the country through the display of maps, pictures, animations, sound, text with data about facts or events, using the Internet and other digital means.

For the development and design of this project it is necessary to use several different software tools, each of these with special applications such as sound, text, animation, edit frames and so on. For the user it will be necessary to have the appropriate Browser that is already available for other, general purposes.

## **INTRODUCTION**

One of the concerns and part of the permanent mission of the Military Geographic Institute has been the distribution and promotion of knowledge about the geography of Chile. For this, over the course of its institutional evolution a series of important and interesting geo-cartographic works have been created for directly supporting education in Chile at all levels, from the youngest ages at school through to University and further education.

At the same time, Chilean institutions, professional and scientific staff, and researchers in general have been provided with a great volume of geographic information through scientific aids which the major works of the I.G.M. offer, amongst which we may note especially : "Atlas of the Republic of Chile", "I.G.M. World Atlas", "Geographic Atlas of Chile", the valuable "Geography of Chile" series with 26 volumes published so far covering major topics such as "Geomorphology", "The Chilean Sea", "Hydrography", "Marine Seabeds", "Geography of the Regions of Chile", etc.

Taking into account the advances in computing that Chilean education has currently achieved, as a result of the meteoric integration of personal computers, the Military Geographic Institute, in line with its constant desire to support education in Chile, believes it to be essential to develop and structure an Electronic Atlas of Chile, called "Chile Digital", and the atlas called "Nuestra Tierra"(Our Earth) : Interactive Geography for Schools", which is based mainly on the existing paper atlas called "Atlas de Chile para la Educación" (*Basic' = school ages 5 to 14*).

The I.G.M. believes it to be essential to develop new products in multimedia formats, but owing to the rapid development of communications through the Internet, our institution has been obliged to commit itself completely to develop those products for the Internet, providing school students initially with a range of information necessary for its development.

Considering the experiences obtained in the development of the digital Atlases, the integration of this educational material into Internet facilities has been the natural step to be taken by any institution, owing to advances in technology and the rapid communication of this learning material to users.

## **PROJECT CONCEPT**

In order to develop any project of this kind, it is necessary to consider the following aspects :

### **Copyright Problems**

The creation of a multimedia product is not easy, particularly if one desires to use existing information, as a certain quantity of material is protected by Copyright laws. This legal term refers to the rights of the creator of a product to protect it and prevent others from copying an original work. The Copyright laws were developed initially for the protection of books of literature, but now they also protect other material such as musical work, photographs, maps, etc.

We have the responsibility to avoid copying products without obtaining written permission from the person who possesses the licence.

It is very important to ask for permission from the person who possesses the licence, as in many cases this is possessed by the publisher and not the author of the product. The people who possess the licence nearly always give their permission freely, but in some cases it is necessary to pay a considerable sum of money. One example is the first electronic atlas of Chile produced by the IGM for which the authors of some famous Chilean songs gave permission for the songs to be included, but the owners of the licences (companies reproducing and selling the music) charged sums so high that it was impossible to include those songs in the product.

Obtaining permission can be a long and tedious task, but it is a responsibility that no one can avoid.

## **Users and Needs**

The traditional paper atlas, maps, texts of academic studies, globes and other geographic materials have been standard resources for the teaching of geography. With the arrival of computers in the classroom, geography teachers now have the opportunity to use that most modern of tools : ***the electronic atlas***, but in order to develop an electronic atlas, first it is necessary to define the type of atlas that we need. For this it is necessary to select the right type; as the atlas can be one of three types classed on the basis of the degree of interaction which they provide and the degree of analytical capabilities which they allow :

### ***Read-Only Electronic Atlas***

This can be considered an electronic version of a traditional paper atlas, without additional functions, but providing easier access to the maps. The advantages over an atlas on paper are found in the production and distribution costs.

### ***Interactive Atlas***

These make it possible for users to handle datasets. The guiding principle here is that there are no true maps : each map is referred to a selection of data made by the user and processed to get as close as possible to the essence of the chosen topic, but almost always being based on subjective elements. In an interactive environment the users can change the colours used to one of their own combinations; they can adjust the classification method or enlarge the number of classes wherever possible.

### ***Analytical Atlas***

This type of atlas includes all the potential functions of an electronic atlas, and moreover the whole range of features that one finds in a Geographic Information System (GIS).

Considering all of these basic aspects it has been decided to provide, as a first step, an atlas without many interactive tools but including information in sufficient depth for school pupils aged 6 to 18 to be able to learn.

Taking into account the fact that one of the major problems faced by Cartographers is the cartographic representation of the time factor (changes, developments, movements, processes), as may be seen in Historical Atlases which possess series of sheets which have to show changes over time in order to be fully understood, The I.G.M. has decided to develop its first digital atlas for the Internet using the "Historical Atlas of Chile" as a basis.

## **PERFORMANCE OF THE PROJECT**

The Military Geographic Institute of Chile has created an interdisciplinary work group headed by the Research and Development Department in order to make this project a reality.

In order to reach a final design and structure for the digital Historical Atlas of Chile, the prototype used was that created by the Author who set it up in the "I.T.C." (Netherlands), together with the existing Historical Atlas of Chile created by the I.G.M. in conjunction with the Education Ministry which is in permanent use by the school students of this country. This latter product, created in a Macintosh platform with a high resolution for its subsequent printing on paper served as the base for the subsequent process of transforming this material to a digital product at a lower resolution and weight for an optimum appearance on the WEB. For the various phases of the process of transformation, such as the reduction of the weight of the images, the design, the programming and the creation of animated effects diagrams and artwork, a select group of professionals was set up in the computing and graphic productions area. This group, combined with the professional guidance received and the above-mentioned bibliographic and cartographic materials, made it possible to advance continuously and swiftly in the creation of the atlas. This interdisciplinary group was made up of the geographer writing this article, a Cartographer, an art designer, a programmer and three technical drawing staff.

The first cartographic phase of the project began with the conversion of the originals for the maps in the historical atlas to digital format. These original images were used as the basis for their subsequent process of conversion to a PC platform in order to be manipulated by the above-mentioned specialists. These files, originally obtained in "Freehand", were processed by modifying them and reducing their resolution and number of nodes in order to allow for a rapid presentation on PC. This major processing step made it possible to better handle the files in interactive and visual presentation uses within the Browsers (such as Netscape or Explorer).

In the application of this new technology, various computing tools were used, in terms of both hardware and software, these being current tools for interactive processes involving maps, texts, images etc. For this project we may point out the use of the following software : "Flash 5.0", "Dreamweaver 3.0", "Corel Draw", "Freehand 8.0", "Adobe PhotoShop" and "Adobe Premier Videos", "Explorer 5.0", the development platform for Windows 2000. The hardware used for image capture, file compression, software development, image processing, sound, etc, included particularly the following equipment : Pentium III, desktop colour scanner and an electronic synthesiser.

Over the years 2000 and 2001 all possible technical efforts in the I.G.M. were mustered to provide to the public this original digital product which, due to its features, can be considered of undoubted applicability in and importance to the educational field, given that it provides to the Chilean community historic information in interactive format, easily accessible using the electronic and computing media available through the Internet.

## **ATTRIBUTES AND PRACTICAL FEATURES OF THE HISTORICAL ATLAS OF CHILE**

The final design was determined as a series of units which each contain several options. We may point out the following geographic and cartographic elements about Chile and its history :

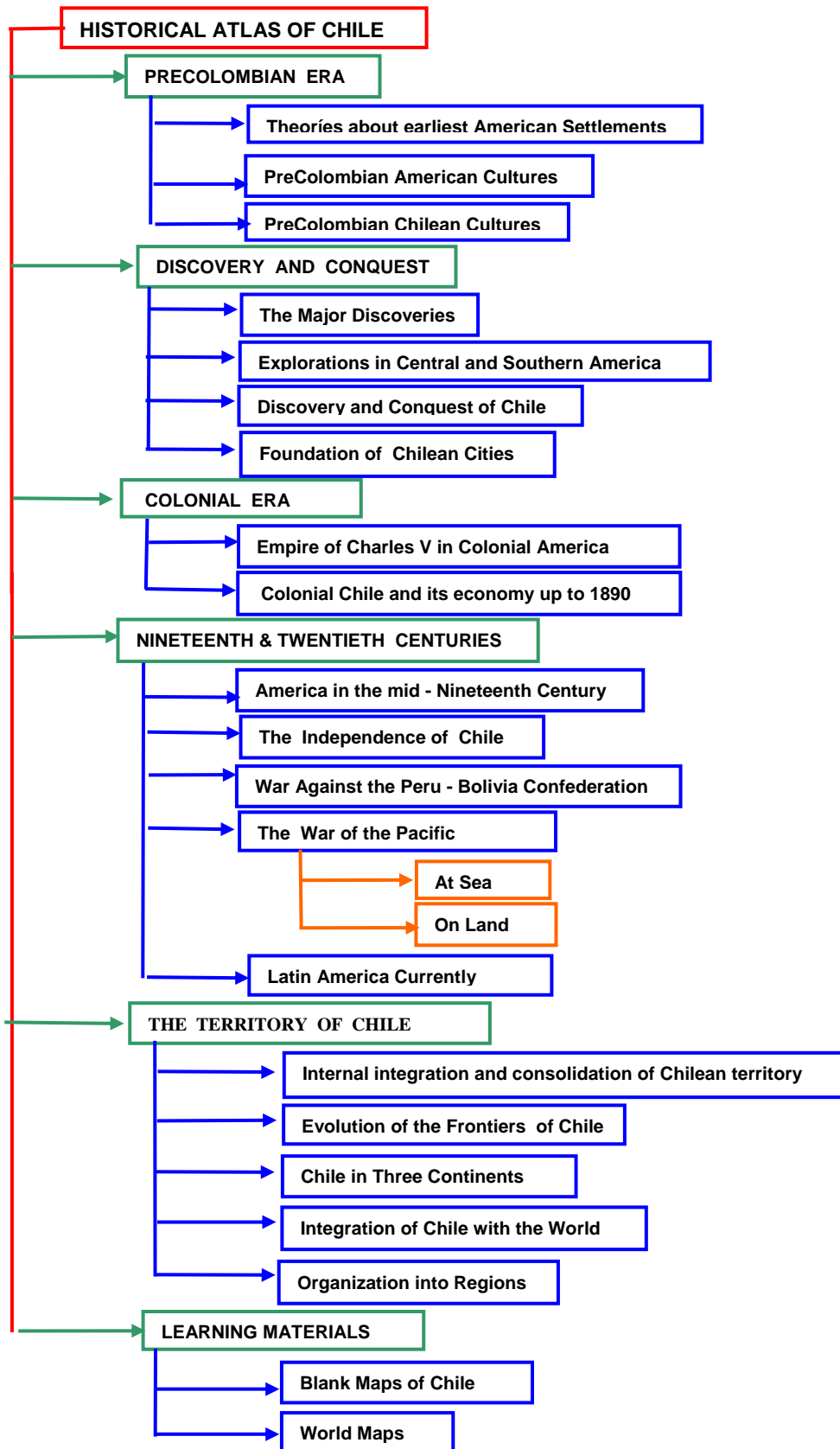
- Navigation over thematic maps, where the historic information is presented about the Pre-Columbian periods, the discovery and conquest of the Continent.
- A modern system for visually presenting in graphic form the material in a sequence of maps on screen about the geographic situation during the Colonial period and the preceding centuries.
- The visual navigation using interactive geographic maps following the course of the Republic of Chile through the nineteenth and twentieth centuries, which show the geographic situation of the Americas, the emergence of Chile into Independence and some regional conflicts of undoubted importance to the history of Chile.
- The interactive graphic visual presentation of maps with the geography of the country in its regional, continental and global contexts.
- Finally there is a series of maps of Chile, a map of the World and blank maps available for educational purposes and multiple uses.

All of these interesting aspects of the history of Chile provided by the units in interactive form, combined with the thematic and regional aspects of the country, make it possible for the user to swiftly access a wide knowledge of the history of Chile through this work with its high level of computing and technology content.

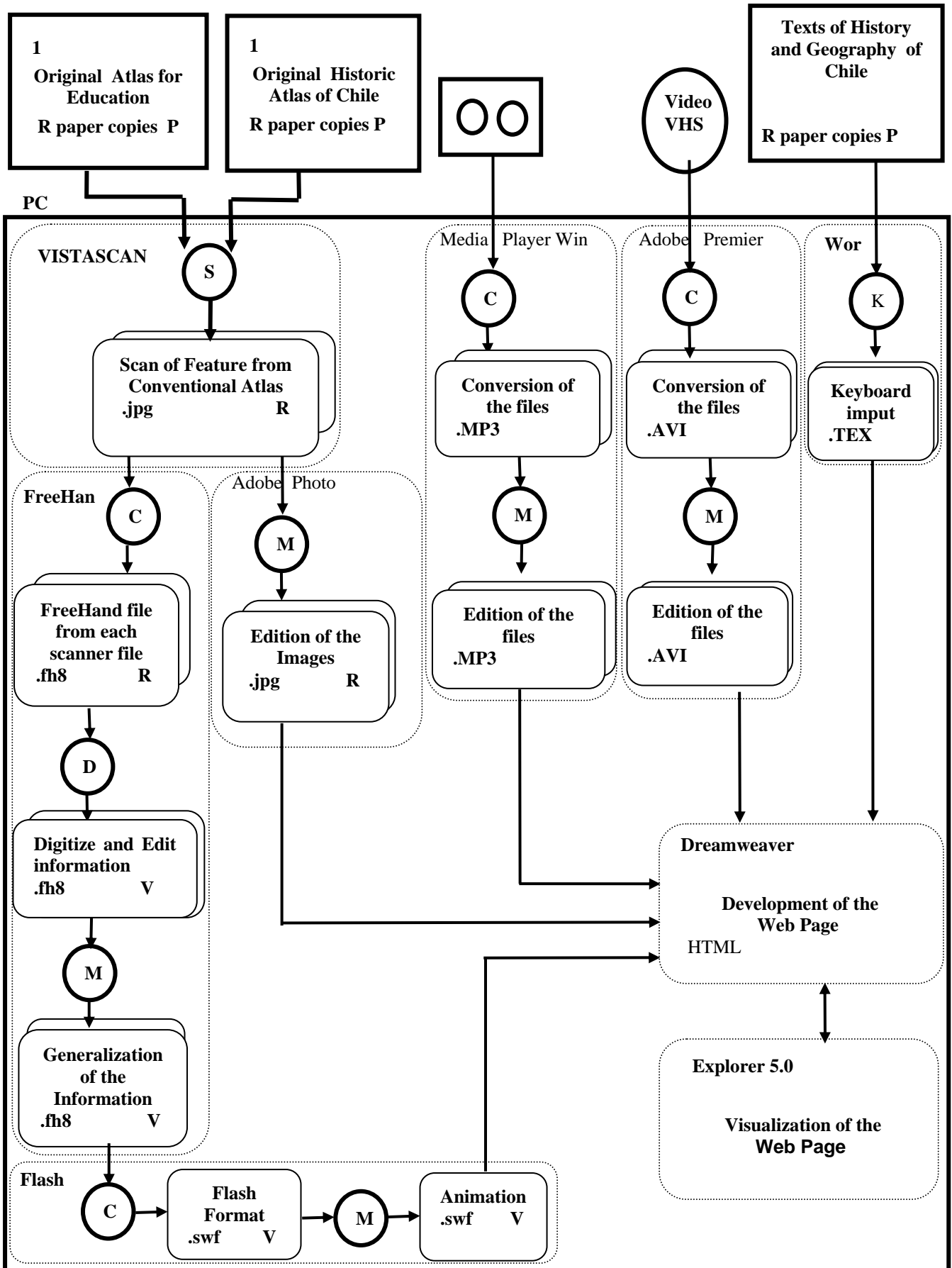
## **BASIC MATERIAL AND DESIGN**

- Historical Atlas of Chile
- Atlas for Education
- Texts of History and Geography of Chile
- Prototype Digital Historic Atlas, design for the author in the ITC.Holland.

## STRUCTURE OF THE INFORMATION



# Flow Diagram



## **TOOLS USED IN CREATION**

### **Software**

Flash 5.0  
Dreamweaver 3.0  
Corel draw 8.0  
Freehand 8.0  
Adobe Photoshop  
Adobe Premier videos

### **Hardware**

PC Pentium III  
Desktop Colour Scanner

## **CONCLUSIONS**

As the official State body responsible for Geographic, topographical surveying and map-making matters for Chilean territory, the Military Geographic Institute of Chile has focussed its efforts on the the distribution of geo-cartographic information with the help of the most advanced computing – graphic systems available, with the aim of fulfilling its fundamental remit, that of communicating the geography of the country and providing to those being educated tools for learning and for acquiring knowledge, these tools being used in an agile and efficient manner. All of this goes together with the insertion of all people, without distinctions as to age or profession, into the world of computing and the Internet.

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