# AN INTERACTIVE MULTIMEDIA PRESENTATION OF VARAŽDIN
## THE FINAL PROJECT REPORT

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*This paper is a follow-up report to a completed project involving members from the Faculty of Organization and Informatics (FOI) and the Karl-Franzens Universität in Graz. It deals with the concept of multimedia and the actual project which came out of a multimedia project proposed by the FOI side. Students and mentors worked on and completed a prototype of an interactive multimedia CD for the city of Varaždin. All the phases of work are described throughout the paper, as well as all the necessary experiences, communication and testing needed to successfully accomplish such a task, with specific attention given to the multimedia needs.*

**Keywords**: multimedia, project, CD-ROM, prototype, interactive.

## INTRODUCTION

In autumn 1996 a joint project was started between the Karl-Franzens Universität in Graz and the Faculty of Organization and Informatics in Varaždin. It was conceived by Dr. Christian Schlögl, Dr. Mirko Čubrilo and Dragutin Kermek, M.Sc. The project goal was to present an area of north-western Croatia, on an interactive multimedia CD, that is from the perspective of the everyday user. In other words, someone who may want to visit those parts of the country. Three students were included in the team, one from Graz and two from Varaždin, each of whom had a special area to cover within the project.

A complete list of the project members is as follows: Dr. Christian Schlögl and Bernd Goger from Graz, Dr. Mirko Čubrilo, Dragutin Kermek M. Sc., Stipica Grgić and Denis Pajtak from Varaždin.

Assistance to members of the project team was provided by Dobrica Pavlinušić and Vesna Martinčević, both from Varaždin.

It was agreed that the team would work at both faculties, with the whole team having regular meetings about the project in Varaždin and Graz respectively. Any other communicating was done via e-mail, where students and mentors alike exchanged information.

The construction of an application which functions on an interactive level and is of a multimedia type is a complex job. One not only has to think about the "standard" project template procedures (planning, organizing, execution...), but about the unique needs of the multimedia (text, sound, picture, interactivity) itself. Homogenizing these two basic proposals - the standard procedures and solving the multimedia needs - is the riddle solver of such a project as this. It is not so just because of its completeness, but because of the fact that, once properly established, the rather complicated looking multimedia surface can very easily be updated and changed. This prototype was built in that way. It follows the natural goal of the application: the production of a user-friendly, interactive system. And it is only one of the goals, since it is understood that many other fractional and lesser goals must be met in such a project; from the aesthetic goals to technical and programming goals.

## COMMUNICATION

In the course of the project, as outlined in the introduction, there had to be, and was, frequent communication between the two teams involved. Once a month the teams met in their respective faculties to finalize the specifics of the projects and to reach decisions. Of course, considering Graz and Varaždin are not right beside each other, the exchanging of experiences as to where we were at in the project and what was happening within the project was crucial. We did this by e-mailing each other the necessary information The actual work itself was divided up at meetings at which we were all present. We'd bounce ideas back and forth until we had the information on what our next steps would be and these in turn would then be discussed at our next meeting together. It should be said that this was the first fully-fledged project of FOI which functioned by these means, and as such serves as a precedent for future projects.

## PHASES OF WORK

Before the planning stage, the timespan and the size, there was *tabula rasa*. We had a general idea for the project. So then the question was how do we go about fulfilling this notion and what should we use to fulfil it? Or before that even, what were the basic decisions to be made about the medium and the mix of elements?

Most media today satisfies the needs of the public: newspapers, the Web, radio, TV... Still, with the rise in PC power and the shortening of people's attention span and time for media, it was decided to use the medium encompassing all the media - multimedia. A multimedia CD-ROM is appealing to all the senses. You can carry it where you want and use it whenever you want. You can choose what you want on it and you can do this as many times as you like. As to why we chose Varaždin? Well,

we needed to address the practical side of the project; where could we find the most available info for any projects? In our local surroundings, of course. And since the initial move for the project came from the FOI, it was logical to use these surroundings.

After these preliminary decisions, the timespan for the project was decided upon. We thought about a ballpark figure of around one year. This would give us enough time to compile all the information and media needed, enough time to put it all together and to make it into something really special, while still allowing time not only for any necessary revisions to the project but for our Faculty responsibilities as well.

Along with the time we considered space, or in this case, the size of the application. This decision was based upon a couple of the basic characteristics of information that we have today: firstly, there must be enough of it for any user to inform himself or herself of anything he or she might need or desire within the parameters of the project. For example, you wouldn't leave out the location of the first aid station or the soccer stadium. The second characteristic: don't have too much information, or you may wind up with a frustrated and lost user. Be sure to carefully assess the boundaries of the application. After all, you can always add more later, just like some of the modern multimedia/Web projects are doing nowadays (new files for Cinemania, for example, are downloadable from the Web and inserted into the basic package).

So we had the basic package and we had the boundaries. The next question to be asked was: What about the tools? Not to be underestimated, this could prove to be crucial when considering the time needed for the application and the finer points of its look/performance. For example, we found out that Director (the program for combining media into executable applications: see [1]), although very powerful, is tough on changes and needs a lot of Lingo work - which would perhaps better suit a more unique task than one we had in hand.

Based on our past experience and the availability of software packages, we decided that the remaining software needed for the project would be as follows:

| SOFTVARE | USE |
|---|---|
| Microsoft Word 7, Notepad | text processing |
| GWD editor, GraphWiz Dotty | structure tree |
| Adobe Photoshop 4.0, Macromedia XRes 2.0, CorelXARA 1.5 | graphical elements, picture processing |
| Macromedia Director 5.0 | connecting, exe version |
| Adobe Premiere 4.2 | video production, animation |
| Sound Forge 4.0 | sound production and editing |

The machines we use were as follows: the Pentium 166 with 32 MB RAM, 486-100/16 MB for lesser tasks, and Power Macs were used by our colleagues in Graz.

We consulted similar CD-ROMs to get a feel for what was good and bad within each of them. Clearly, six people working on the project may have seemed like there

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weren't enough people involved, but with constant personal and e-mail discussions we agreed upon some basic points concerning the look and the feel of the application. The CD-ROMs consulted were:

- Microsoft Encarta '97 (see [2])
- Microsoft Cinemania '96, '97 (see [3])
- Microsoft Bookshelf '96 (see [4])
- Microsoft Encarta World Atlas '97 (see [2])

Along with the look and the feel, one gets a better idea of the elements inside any page, the quantity and the complexity of connecting, etc. At this stage we drew upon previous experience in text and picture editing to figure out the possible numbers and the time involved. And it should be stressed at this point that working with multimedia DOES require knowledge of media parts, otherwise it would be all too easy to get carried away with the prospect of using multimedia and tackle a task too difficult, too big or totally impossible to do in any reasonable time, using present technology.

Next we needed to divide up the work. This is where the organizing spirit had to come in. More often than not we met with the wrong people in the wrong place, or a similar non-satisfying situation arose. Either someone wanted too much or offered too little, lost their will, their optimism, then our ideas drifted away or they simply weren't heard.

If we'd known the people in the group, there wouldn't have been any problems. However, we didn't, so a lot of brainstorming had to be done to determine what our strong points were, what needed to be learnt and how much good old manual work there was (text, pictures, etc.) We considered what everyone wanted to do. Of course, compromises had to be made; video work in one stage of the project might mean text work in another. We also consulted applications dealing with the concept of group work. Macromedia Showcase shows the actual dividing of positions according to the number of persons involved.

To cut a long story short; the Varaždin team and the Graz team were both to dig through similar applications and see what good points could be found in them. Initial toolbar ideas trickled down from Graz (Goger), while, logically, the Varaždin side shuffled and piled texts, pictures, video and sound clips together (a multimedia "grab bag").

This, of course, presented the problem of sources. Most of the raw data could be found in libraries, so that's exactly were we headed for. After this was exhausted, a consultation with the tourist board followed. Pictures were taken in the museum. We contacted local radio and the local TV station. Various people with stories to tell were also considered important, as well as the ones with specific areas of expertise (for example historians, a vocal tour guide for the project's Tour, etc.); plus the owners of specific items or bits of data as well (for example, a clip of a fashion show...)

These raw materials would later be processed using the software described earlier, to individually fit into the size and the shape criteria which we outlined earlier and then meshed into connected media, and, finally, into interactive multimedia.
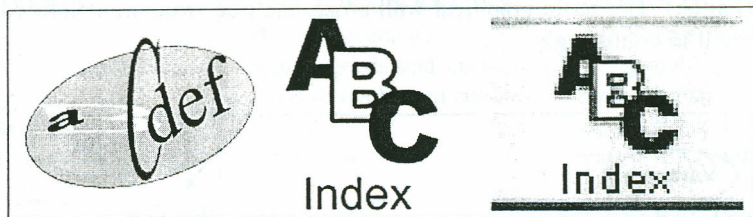
Picture 1. Phases of button manufacture

After everything was compiled, more brainstorming revealed the composition and the look of levels inside the application.

We had a choice of a canvas which was of almost unlimited scope. Colors were limited to some 65,000 hues, the size of screen with pixels, and the variables of the elements only with spatial combinations. Sound and animations were time-related. Tons of studies can be written, and were in fact written on this subject (aesthetics, taste, placement, color...), but here we'll analyze just one detail and leave the rest to the individual.

Let's say we began with a blank, white surface on which we sketched out the boundaries of all the elements. So the decisions left were those of color, their hue and lighting, possible effects... We began by following the simplest rules, and there were two of these: use of primary and secondary colors is the cleanest option; light contrasts with dark, strong hue with less hue, etc.

In our case, we had 6 branches in which we fitted elements. And there were 6 primary and secondary colors. Furthermore, the background needed to be lighter or murkier than the elements (picture, text, toolbar...) No matter how the specifics turned out, the important decisions were met and the pages started to take a definite overall shape.

Now, the interface in such applications (i. e. the user interface) is understood to be basically the whole working screen (headings, pictures, buttons...). It has to be said that ALL such elements were of our own design and are unique and original, so as to give a personal identity to the application, therefore the user interface was decided to be as follows:

- original (authentic)
- intuitive and easy to use
- functional

When all this was properly decided upon, a question arose about our next steps: the database needed making; someone had to tackle the Director and its programming language, Lingo (Grgić). We also decided on having a tour through the city inside the application. Pictures needed to be taken (Kermek) and sound clips of a tour guide

arranged (Pajtak). The basic graphical wall arose, the tree structure solidified and the actual filling it in could begin.
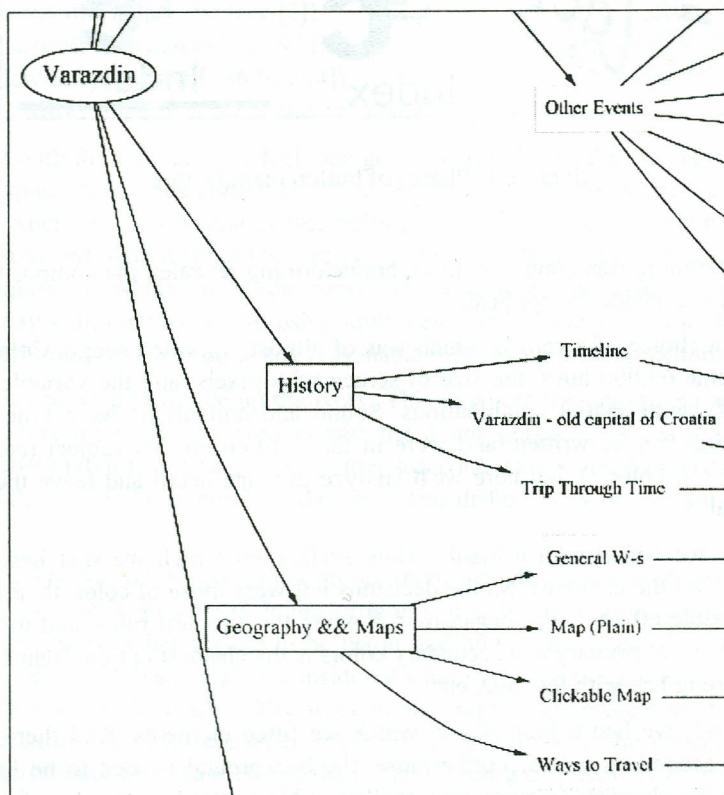
Picture 2. A part of the structure tree

## CONTENT STRUCTURE OF THE APPLICATION

This application is to have in itself all the information connected to the Varaždin region, both past and present, and is to be used as a guide to a visitor to these parts. The structure of the content was broken down into the following topics (any further changes after the writing of this paper will be duly noted):

| 1. SIGHTSEEING | 3. CULTURE & EVENTS | 5. GEOGRAPHY & MAPS |
|---|---|---|
| · churches | · Baroque evenings | · map of general info |
| · Old Town | · folk (legends and customs, | (topography...) |
| · cemetery | icons & symbols of culture) | · zooming map |
| · structures | · theatre | · clickable map |
| · features | · other events | · map of ways to travel |
| **2. PEOPLE** | **4. HISTORY** | **6. GENERAL INFO** |
| · general impressions | · time line (important dates) | · main services (tourist offices, |
| · historical personalities | · Varaždin: the old capital of | stations, police, hospital...) |
| · present personalities | Croatia | · rest services (hotels, hostels, |
| · "the heart and soul" | · direction through time | lodging...) |
| | | · other services (gas, |
| | | restaurants...) |

A tour is also generated as a part of the application, showing all the most important parts of the town in picture and sound.



Picture 3. Main page complete

## LEVEL STRUCTURE

The application starts with a picture of one of Varaždin's church towers, with *Varaždin* written on it. This is only while the application is booting up.

The main picker (level 1) consists of 6 topics described in the Content structure and the Tour. The six topics are each represented by their own picture, which is closely linked to the topic itself. Pictures can be clicked on (this leads to level 2) and are the background for that particular topic for level 2 and lower. The Tour is represented by its own simple design and, when clicked on, will start the tour itself.

Level 2 consists of the background (the picture from the main picker) on the whole screen except at the bottom and this is where the control bar rests.

The control bar consists of (in order of appearance):

□ Menu button - where you can choose to quit, find out about box (credits) or go to the main menu
□ Tree (Structure) - showing you where you are and giving you access to any other page. It is supported by balloon help, so you know where you are heading.
□ Index - an alphabetical showing of all the main pages (terms)
□ Search - where you type a word and get its position within the application
□ Navigation buttons - 5 buttons for page movement (main-menu, next/previous page, next/previous section)
□ Media (Gallery) - for showing all the animation/sound sequences
□ Print - for printing the pages
□ Copy (to Clipboard) - for copying the text to the clipboard
□ Help - brief help in case you get "lost"

The major portion of the screen is divided into two equal parts. On the left there are small pictures - these are representations of the level two topics. For example, in History they would represent the Time line, Varaždin: the old capital of Croatia and direction. On the right is the space reserved for texts: when you pass over the particular picture, a general text about the particular sub-topic would appear. Clicking on the picture takes you to level 3.

Level 3 is the breakdown of a particular section of level 2. For example, if we chose churches from the sightseeing section, we would now have a new picker, like on level 2, only more specific; churches in the past, or types of churches. This process continues onto level 4.

Level 4, in the case of churches, would be the level where the concept is finalized: in the upper left hand corner of the page we have all the pictures and animations pertaining to that page. So, if we 'picked' further, for example, churches of the past, we would have all the churches pictured in that upper left window. On the right there would be the general text. Of course, if a particular topic can't reach level 4 because there isn't that much detail to go into, the concept (design) of level 4 would be used on a higher level.

If level 5 was necessary, for example in the case of some important relics in a particular church, that would be made in the same way as level 4, but with voice accompanied pictures (this is a short description of the relic) plus the balloon help text.

Therefore, the interface and user-friendliness is available on several levels: the user clicks his/her way through levels and has instant access to any level via the tree button in the control bar. He/she can also search, look at the index or get some help. Furthermore, whenever necessary, the balloon help pops up when the user passes over a particular image.

The Tour funcions as a major part of the application. It consists of some 70 pictures put together as a slide-show, representing a walk through the city (an area of some 200-300 meters on each side of the center). A professional speaker was hired for this job (Vesna Martinčević), and a special map was designed (by Dobrica Pavlinušić) to represent this walk through the city. After various cuts and pastes, it was decided that the tour would be 7 minutes in length.
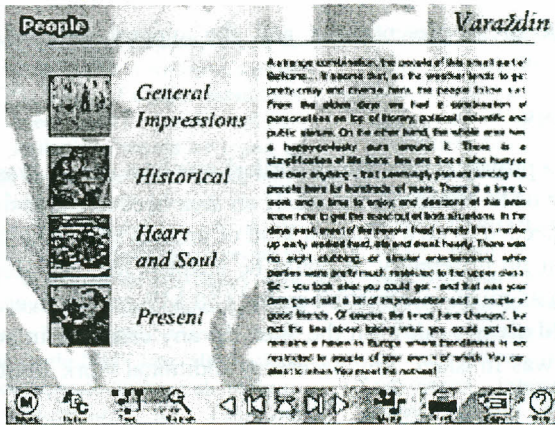


Picture 4. Level 2 screen complete with toolbar

## THE RESULTS - TESTING AND PRESENTATIONS

There were two kinds of testing at this stage: internal and external (individual). The internal changes were our changes - something that we technically overlooked. Individual external testing concerned people who didn't have anything to do with the project; they were given complete control of the application and a few minutes to "roam freely". The results from this type of testing can often point to things the makers wouldn't have otherwise noticed, like the clarity of button explanations, amount of info inside the levels, etc.

When the results were satisfying (that is, when the internal changes and improvements were completed) and the level of interactivity and cohesion was satisfactory, it was time for the presentations.

The project was regularly looked at by all members of the project team and it has to be said that we were very lucky in that all these members offered their continual support and they allowed ample time for the presentations.

The application was shown on several Faculty occasions:

- Faculty Day 1997
- AIESEC national assembly
- the 35th Anniversary of the Faculty of Organization and Informatics

It was also shown on other important national and international occasions, such as Info '97 (the International Informatics Fair in Zagreb), the University Fair in Graz and on trips to Istanbul, the US, etc., as well as during the visits of various dignitaries to the Faculty.

It should be mentioned that the input from such occasions proved to be very useful; for example, it was noticed that there were too many pictures in the tour for spectators to comfortably follow the path (this was later corrected).

And as a result of these presentations and the support that was given the application got better.

## FUTURE DIRECTIONS

The beauty of such a project (as discussed earlier) was how easy it was to add data and how easy it was for us to change direction. If an area needed expansion - another level was added. If we needed to do a different kind of project, we could use the bones of this design and fill it up differently. It could be adapted for commercial or non-commercial needs, with as much information as the 650 MB could cover. And if that wasn't enough, we could always put it on the Web. In any case, the important, basic phase - the prototype - was finished. Any necessary additional work could take many different forms.

## REFERENCES

[1] *Macromedia Director*, 3rd edition, Macromedia Inc. San Francisco, CA, 1994.

[2] *Microsoft Encarta 97 / World Atlas CD-ROM*. Microsoft Corp., 1997.

[3] *Microsoft Cinemania '96, '97 CD-ROM*. Microsoft Corp., 1996/97.

[4] *Microsoft Bookshelf '96 CD-ROM*. Microsoft Corp., 1996.

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### INTERAKTIVNA MULTIMEDIJSKA PREZENTACIJA VARAŽDINA
### ZAKLJUČNO IZVJEŠĆE PROJEKTA

#### Sažetak

*Ovaj rad predstavlja zajedničko zaključno izvješće članova projektne skupine s Fakulteta organizacije i informatike Varaždin (FOI) i sveučilišta Karl-Franzens u Grazu. Rad se osvrće na pojam multimedije i konkretni projekt koji je potekao od strane FOI-a. Studenti i mentori izrađivali su, i završili, prototip interaktivnog turističkog vodiča kroz Varaždin, pretočenog na CD-ROM. U izvješću su opisane faze rada, kao i iskustvo, komunikacija i testiranja potrebna da bi se takav projekt uspješno priveo kraju, s posebnim osvrtom na potrebe i zahtjeve multimedije.*

**Ključne riječi:** multimedija, projekt, CD-ROM, prototip, interaktivnost.