BIAS: Hypermedia Development Approaches to Non-Technical Users

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Abstract

Hypermedia is a new language, mainly used in the phases of register and information analysis in a scientific research, making possible a universe of explorations by its spectators. Curiously however, little is seen as final form of presentation of the academic works, either for the tradition of the writing as form of presentation or by the difficulty to find methodologies for development in the language guided the area of the Human beings. The aim of this article is to present approaches for development of multimedia applications, oriented, primarily, to non-technical users, normally not contemplated in the existing methodologies for the development in this technology. It also presents a product that speeds up the development of projects and an example of application carried through the use of these resources, suggesting the results make possible any non-technical researcher to initiate its experiences in positive way in the field of the hypermedia.

1. Introduction

Although the observation and use of various media is common, mainly during the process of scientific research data collection and manipulation, few are carried out with end results and presentation of work in multimedia format. In spite of the potential of hypermedia language being almost unlimited, what counts at the end of it all, is the predominance of written methodology in science [2], whether because of bureaucratic factors that demand the paper as only record of the research, or lack of competencies and methodologies for the development in this environment.

Although there are dozens of methodologies for developing hypermedia [5, 6, 7], the greater part of them focus on the developers of applications and designers, in spite of the great benefits that this technology may offer researchers in the most varied areas of knowledge. The same happens with the so-called authoring tools or specific applications that provide hundreds of technical resources and try to minimize the difficulties of using them; however they do not make available methodological procedures for their use.

The observation of interest is the desire by various post-graduate researchers to carry out or present their researches in multimedia format, allied to the almost non-existence of works and applications directed toward the non-technical public, contributed towards the proposal of the BIAS approach.

The word BIAS is an acronym of Basics, Initiation, Assets and Solution and, translating the same word into English, has the real intention of giving researchers "an advantage" in the process of development in hypermedia.

Through various techniques and artifacts used mainly by designers, BIAS serves the various phases of a multimedia project, mainly emphasizing the processes of conception and organizing ideas, project management, storyboarding (initial stages), navigation flow sheets, layout of screens and prototyping (advanced stages), generating documentations (finalization) and programming (future project).

To increase the productive of users during the utilization of BIAS, an application called myBias was developed.

BIAS and myBias irrespective of the authoring tool used allows users to have total control of what they wish to obtain as a result of their hypermedia job. The documentation generated may be used and understood by any multimedia application development company, should the author not have the technical knowledge to develop her own application.

This article intends to validate the efficacy of the approaches and myBias tool empirically, reporting a

brief experience study called "*An Interdisciplinary Analysis of Flamenco Dancing*", created by a researcher without prior knowledge of the processes and methods used in designing hypermedia applications.

2. BIAS general overview

BIAS is divided into four systematized phases which, in the end, generate documentation ready for starting the programming procedures. A brief summary of each phase follows:

- *Basics* is the phase in which researchers seek to understand some basic concepts of hypermedia and start to record their project specifying objectives, deadlines for creation, end-user profile and estimated costs of making it.
- *Initiation* contemplates, through the induction, organization of ideas as from various artifacts used in the design process, for example, brainstorms, sketches, storyboards and flow sheets, thus delineating the concepts that should be approached in the final project.
- *Assets* is the final phase in which researchers collect and classify all the media that will be used in the job, taking care of questions like copyrights and establish links between them.
- *Solution* is the moment when researchers, through the itinerary generated in the Initiation phase, visually organize each element classified in the *Assets* phase, inform the developer where each media will be positioned as well as the actions that will happen in each scene.

The four phases of BIAS act as guide for the creation of a hypermedia project, providing questions and information to users, helping them get good results in a short space of time. It can be proven in the presented example of application ahead or in as much other projects carried through for this author. The steps can be used in serial way, where each phase is carried through before the successor or in parallel, allowing users to advance and to retrocede when they have more information for a specific phase.

BIAS can be used supporting other techniques and methods acting as a documentation tool to external methodologies oriented to application development. The main objective of BIAS is facilitating the conception and ideas log, as well as the documentation of hypermedia projects.

At the end of the process, researchers have the detailed documentation to start the development of their projects in any authoring tool they know. Should they not know how to do it, the documentation can be sent to a developer who will quickly be able to develop the project, due to the detailing that happens in each place and the classification of each component.

Figure 1. myBias tool

Basic area of the tool, where users can establish the aim, audience, cost and tasks of their projects.

3. myBias

myBIAS is an application developed in Macromedia Director, using the approaches to help non-technical users and researchers to start and register their projects (Figure 1). It increases the productivity of ideas log and covers all the four phases of the BIAS. Using myBias, users can understand better the phases, annotate and brainstorm ideas, create task to themselves or others, get access to online references, control budget and project times, organize multimedia content and generate documentation in text and presentation (*Microsoft Office PowerPoint* slides) formats to be use in pre or pos-production stages. Besides it, myBias automatically generate a compacted file (*ZIP format*) containing not only the documentation and guides to development like thumbnails and a list of actions in each screen but also all media used in the project (audio, video, text, animation, etc).

When start myBias users can choose to be in the *Information* or *Studio* areas. In the *Information* are they can read about BIAS and navigate thru a list of online and offline resources like other methodologies, books, articles and movies about hypermedia. They can also take notes of any topic covered in this area, being able to search and retrieve personal thoughts. In

the *Studio*, they can start a new or open a saved project. Here is the place to answer questions that will help in the development of their projects. Everything begins with basic information about the project and thru guided brainstorming and note taking features users are able to move to a "practice" approach of media selection. myBias automatically convert images sizes and formats to ready to web and offline common ones. After it, storyboards with detailed information about where and when each type of media element will be positioned and all interactivities that will be allowed by end users can be done. At the end, myBias generate the documentation, presentation and an icon for the project.

As previously informed, myBias was completely developed using Lingo, from Macromedia Director and a couple of Xtras from several other vendors.

myBias is currently available for download in Brazilian Portuguese version at www.asouza.com and runs in Windows machines only.

4. BIAS study

BIAS was first applied in the development of the CD-ROM *"An Interdisciplinary Analysis of Flamenco Dancing"* by Tania Ferreira [4]. The content of the work discusses the various characteristics and forms of Flamenco dancing and makes available a series of texts, images, videos and audio about the subject.

The work of definition and design was entirely done by the researcher, using a prototype of the approaches covered by BIAS and the myBias tool, especially developed for the *Assets* phase (Figure 2), as well as a text editor for designing the position of each CD screen, and programmed, from all the documentation generated by the author of this text. The following are some of the data:

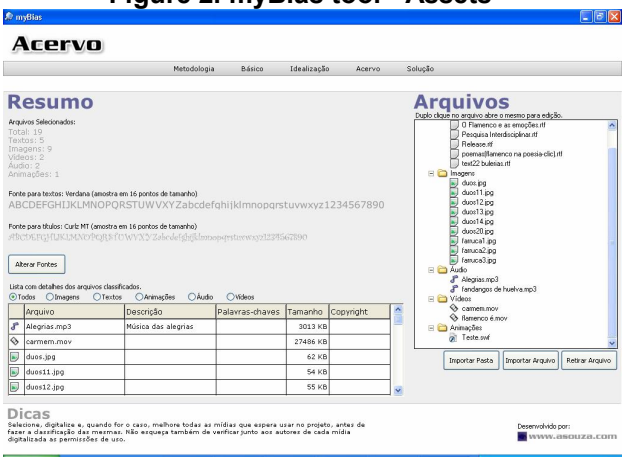
- From the time of getting to know the methodology and delivering all the completed documentation to the project author took 10 days;
- The correction of images, audio digitization and programming, tests and corrections of the CD happened in 3 days;
- The designer, who was also the cd-rom developer, respected the design of each scene of the work proposed by the researcher, making sure that the final project would be exactly like the author had established it to be.

In figure 3 one of the screens of the completed project may be seen.

To reiterate the effectiveness of the approaches, even further, no type of programming resources unknown to the researcher or specific to certain software was added. In spite of the cd-rom having been programmed in the Macromedia Director, the end result could be reproduced in any other authoring tool.

Considering only the useful development and programming time, fewer than 15 days were counted, and it could be affirmed that BIAS was shown to be extremely efficient both for the developer and for the researcher, who only a few days previously had not had the least idea about how to develop her project in hypermedia format.

Figure 2. myBias tool - Assets



Assets area of the tool, where users can categorize and preview each media of the project.

Figure 3. Cd-rom Flamenco Dancing

One of the screens of the Flamenco Dancing project, designed from the *Solution* phase sketches.

5. Lessons learned and future work

As noted in this project, other tools and artifacts may be used to meet the requirements of techniques or phases not covered by the BIAS [1, 3], mainly in the question of final programming of the work, which may be done through authoring tools or more commonly used applications like presentation programs.

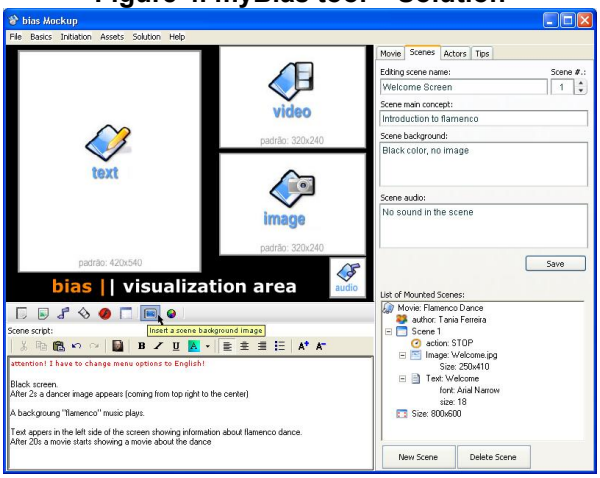
Currently myBias primary objectives are: (i) to guide and conduct the process of adapting the "conventional" research material to the hypermedia format (Figure 4) and (ii) automatically generate project documentation from previous information and material.

With presentations in congresses and some Brazilian universities, the software is gaining attention from students and professors and, mainly via *word of the mouth*, myBias were already downloaded by more than one hundred people.

Based on the development experience and assessment of the resources and approaches covered by BIAS and the tool, several opportunities for improvements and future work are seen:

- Create not only the documentation but a file, in standard XML format or SMIL, with the content of the application (actions and media element position in screens) for use in any compatible external application;
- Allow the execution of the code generated using a "myBias runtime" tool.
- Localization of the code to other languages, at least English;
- Better project management features like alerts and import/export options to worksheets or project files like *Microsoft Office Excel* or *Project*;
- Expand features in the brainstorm allowing ideas and/or task grouping and shapes connectors;
- Audio and video manipulation in the *Assets* area;
- Increasing information about possible behaviors and actions in the Solution phase;
- Interface (re)design;
- Integration of the BIAS in other applications and integration of other applications to the myBias tool, reaching areas not currently covered;
- Exploiting its use in specific projects in areas of activity like education and knowledge management;

Figure 4. myBias tool – Solution



Solution area of the tool, in which the user positions the design elements in each project screen.

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