

LAYOUT DESIGN PRINCIPLES FOR CROSS PLATFORM PUBLICATIONS

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ABSTRACT

Design is a way of communication and expression. Words, shapes and images are a language and all together contribute to an effective communication. Designers and creative media labs have focused on the design of printing artifacts for years and in order to stay in the market, the same people adjusted their design skills for cross platform use. This paper discusses the various factors that affect the design of the layout for cross platform publications, the technical specifications and the differentiations in the process of the elements that are being used, the psychology of the user and the way designers should face the layout design for new technologies. Design is the most important factor for the future reader's / user's judgment on whether a printed artifact or a new media application is interesting, and worth spending time on.

Keywords: Layout design, concept, interface design, cross platform publications, target group analysis, user psychology, media, Interactive TV, mobile screen.

INTRODUCTION

New media needs and platforms have changed the common rules and specifications for layout design. Designers for print adjusted their design skills for use in new technologies and from paper to screen. New rules have been adopted varying on each technology and platform used.

Media companies and publishing houses have formed interactive divisions for their services using the same people that, previously, designed for print. The results for this transition and convergence of the layout design show that the divisions never educated their staff and that most of the applications failed because of the lack of knowledge in this sector. Rules that need following prior to designing are not always applied. Media companies and publishers seek for quick revenue increase without taking into consideration the fact that their services are addressed to people with different backgrounds, ages, status, interests and cultures. A high percentage of development teams that have been asked in the Greek market don't even have a target group analysis before starting with the design and development of the applications.

OBJECTIVES

The objective of this study is the analysis of the layout design process for cross platform publications, the full understanding and research of the technical specifications and variations for each platform, as well as, the emotion and psychology of the designer during the production phase. The author researched on the transition from print design to screen design and explains how this transition has been achieved from the designers in the market. The main objective of this paper is the understanding of the differences in the design for cross platform publications and the design principles of the different platforms.

METHODOLOGY

This study has been carried out partly retrospectively through studies of literature, and partly prospectively through qualitative interviews, questionnaires and one case study. The research concerned speaking with designers, programmers, human factor departments, multimedia and telecommunication companies, web development teams, publishing houses and new media companies.

The case study concerned a specific service of Vizzavi - Hellas that requires design for mobile use but is developed and tested in a web environment. The material is primarily designed for print, as the content of the service is based on magazines and newspapers of the Greek Market.

In order to have a full understanding of the production cycle three types of questionnaires have been developed. The first questionnaire has been directed to designers in creative departments in order to understand the way a layout is created from briefing to production, their background, the technical specifications given, the transition from layouts for print to layouts for screen and the emotions during the creation of the layouts. The second questionnaire has been directed to development teams and programmers in order to understand their limitations in the development phase regarding the layout, the problems they face while developing applications for cross platform use and the cooperation with the creative teams. The third questionnaire has been directed to project managers in order to understand the briefing given to the development teams and the background knowledge of the project managers. The questions were augmented with in-depth interviews. The opinions of those interviewed were further discussed. The persons interviewed have been able to speak freely so that the author's opinions and ideas have not affected the information compiled. The results of the survey were analyzed and combined with the findings of the research from literature in order to obtain final conclusions. This approach was applied in order to relate the quantitative and qualitative research methodology and obtain as reliable results as possible. The author transfers the results in order for the readers to form their own opinions and discusses the results in combination with literature research.

BACKGROUND

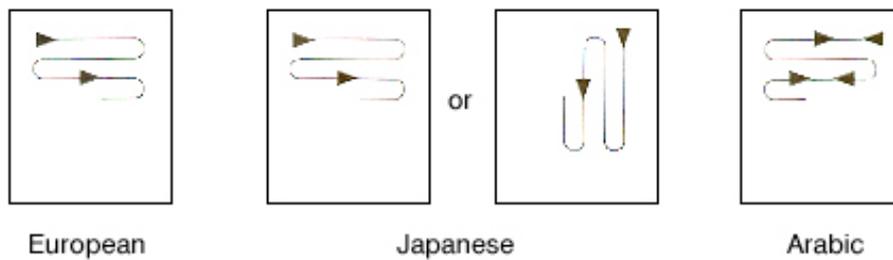
The process of design is a series of decisions. The position of an object, the use of a technique, colour, style, material; all must be chosen. We are all designers in one-way or another. Setting out the objects on a desk requires small decisions. Planning the order of a day's activity involves making choices. The result of making these kinds of decisions is a plan or a design. However, a distinction should be made between designing for ourselves and designing for other people. Designing for other people involves responsibility to understand the needs of the person and to provide the best solution. If you are making a decision for another person, it has to be the choice that is best for them [Martin, A. and Eastman, D., 1987]. Design is in every part of the physical world and has a profound effect on the lives of people [Martin, A. and Eastman, D., 1987]. A positive experience actually changes the way the brain works. That means that things actually do work better. When you are anxious or afraid, simple tasks become hard. There is a wonderful study that was first done in Japan in which researchers used two ATM (Automated Teller Machine) designs, one which people judged as ugly, the other being judged as pretty. The ATMs were identical in terms of function and usability. But people thought the one was worked better and easier to use. A group of Israeli researchers said "We don't believe it. Maybe it's the case with the Japanese, but Israelis don't give a damn about looks. All they care about is that the device gets the job done". The group repeated the experience. To their great surprise, the Israelis showed an even bigger effect [www.TheFeature.com, interview with Dr. Donald Norman on human-centered design for the mobile market]. Because people have a strong positive bias toward social relationships and predictable environments, the more a media technology is consistent with social and physical rules, the more enjoyable the technology will be to use. [Reeves, B. and Nass, C., 1996]. Design doesn't mean "make any random thing", it means "make something that works in the real world". Designers have always needed to work within such constraints as, say, the limited resolution of newsprint or the size of the printed page [Jakob Nielsen & Marie Tahir, 2002]. Designers should balance beauty with usability, something beautiful doesn't mean that is usable and vice versa. In the quest for enhancement of life, let us not be usability bigots. Yes, products must be usable. But all the many factors of design must be in harmony. Marketing considerations must be accounted for, aesthetic appeal, manufacturability – all are important. The products must be affordable, functional, and pleasurable – and, above all, a pleasure to own, a pleasure to use. After all, attractive things work better [Donald Norman, preview of book *Emotion and Design* – Interactions Magazine, 2002].

Two very important aspects for the identification of the target group analysis in terms of culture and status are colour and language. In FIGURE 1 you can see the differentiations in colour for three different countries. Colour can communicate function, quality, and nationality. Colour is a powerful part of human perception [Fernandes Tony, 1995]



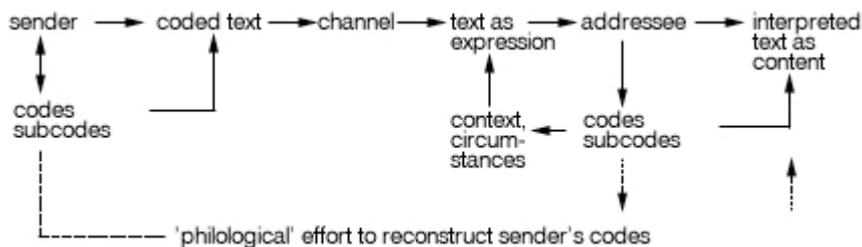
Source: Global Interface Design – Tony Fernandez p.131-132
 FIGURE 1: Different colour palettes depending on culture.

In FIGURE 2 you can see the differences in the reading directions for various languages.

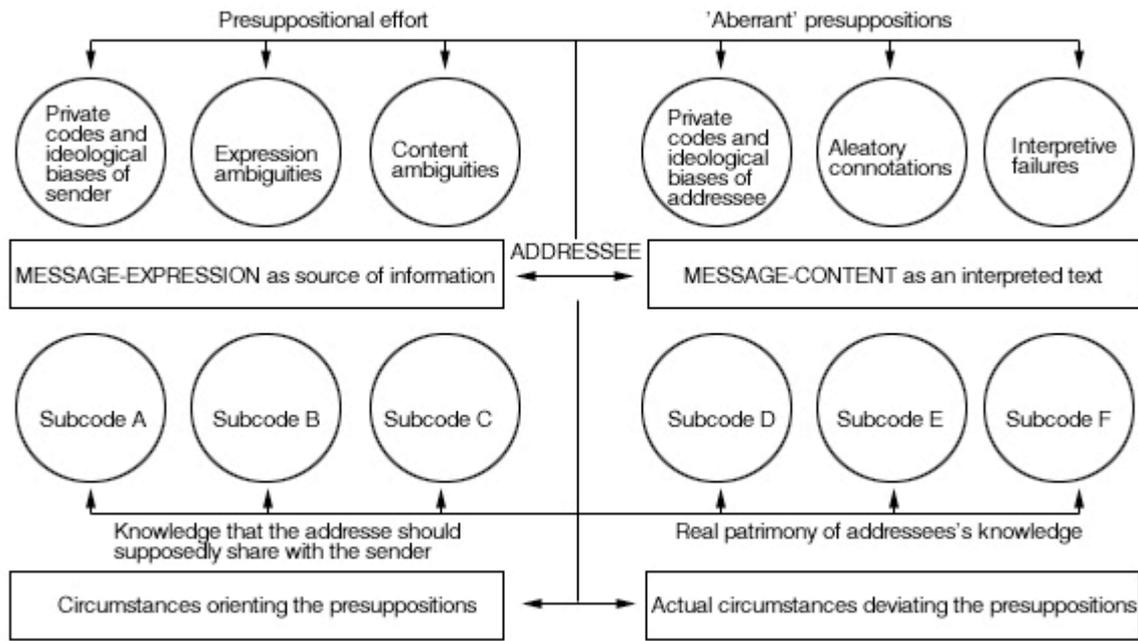


Source: Global Interface Design – Tony Fernandez, p.26
 FIGURE 2: Different colour palettes depending on culture.

To organize a text, its author has to rely upon a series of codes that assign given contents to the expressions he uses. To make his text communicative, the author has to assume that the ensemble of codes he relies upon is the same as that shared by his possible reader supposedly able to deal interpretatively with the expressions in the same way as the author deals generatively with them [Umberto Eco, 1979].



Source: The Role of The Reader, Umberto Eco, p. 15
 FIGURE 3 – COMMUNICATION MODEL



Source: The role of the reader, Umberto Eco, p.6 – Reprinted from A Theory of Semiotics, Umberto Eco, p.142
 FIGURE 4 – Semantico-pragmatic process

RELATED WORK AND RESEARCH

Sony BPRL have done research into Interactive Television and the studies included looking at basic design principles and considerations for the end users screen. Interactive design considerations involve several aspects. These include elements such as the enhancement options, broadcast constraints for the delivery of the interactive content, and a set of standards (action safe, title safe, colours, large fonts) for creating the enhancements. The design considerations and decisions made in the process will help to shape the enhancements the design team create. From the production perspective, there is substantially more equipment required for the creation and delivery of interactive television than simply the set-top box in the viewer's living room. The design specifications for dimension can be seen in FIGURE 5. Since the content is not scrollable the action safe and title safe areas need to be considered. The resolution for the interactive television dimensions is 560X420 pixels.



Source: Microsoft TV

http://www.microsoft.com/tv/working/training/MSTV_OLT/docs/prod/doc49.htm

FIGURE 5 - Interactive Television Design Area

Colour Issues for Interactive Television

There is a great difference on the colours between the TV and the pc. For example white looks blurry, bright red glows and yellow creates a “crawling” effect. The colour palette should support only NTSC safe colours for USA and PAL for UK television broadcasting, in comparison with the computers that support a variety of colour standards as True colour (millions of colours), and browser-safe colours (216 colours) for the web. In FIGURE 6 you can see a design mock-up of the enhancements showing the dimensions and the colours in hexadecimal values although the true colour testing is viewed on television. While designing, a converter can be used in order to connect the computer to a television monitor. When the design and code has finished they are posted to an external web server and viewed through an interactive television service.



Source: Microsoft TV

http://www.microsoft.com/tv/working/training/MSTV_OLT/docs/prod/doc51.htm (1)

FIGURE 6 - Example content displayed

Text design principles and comfort

It is very important to use font families and font sizes that are optimal in viewing. The trend for iTV services is to use Tiresias. Text is very often used for navigation so it should be designed in such a way that it is viewable from a long distance. The readability of the text will determine the efficiency of the interactive content accessibility to the users. The text colour should be easy to read and not glow or blur when displayed on the TV

screen. For example, even though white is often used on web, when displayed on the TV screen it causes the edges of the picture to warp.

Contrast issues

The background colour should be chosen carefully as background and text combinations can lead to bad viewing. It is very important for the viewers to be able to distinguish the letters from the background e.g. black background with white text is tiring to read.

Studies from Microsoft have shown that text smaller than 18 point is difficult for viewers to read. The bigger the font the better the legibility, as a result there will be less space for content. Also the studies have shown that serif fonts are more difficult to read on television than sans-serif fonts, because serif fonts tend to blur.

Interactive television formats

There are two different formats for presenting interactive television programs. The first one regards layering interactive elements over the full-screen television picture and is referred as Interactive TV Overlay, where interactive elements are layered on top of a full-screen television picture. The second one regards embedding the television picture in the interactive elements and is referred as Embedded TV Picture format, where the full television picture is embedded within the interactive elements. No matter the format, the designer should include a full-screen button in order for the user to switch from iTV elements back to television picture.

Navigation Controls for iTV

It is very important to create navigation controls that are user friendly and easy to use. Users navigate between links and forms using a remote control or an infrared keyboard.

Content available across multiple delivery platforms

In order to have a successful business model content should be able to use across multiple delivery platforms. Many organizations are now moving towards presentation independent 'format neutral' data interchange standards such as NewsML. With NewsML, different formats can be assembled and integrated. Items that are published for NewsML includes images, audio, text files (used for the Internet, WAP and TV). The interfaces need to include personalization and appropriate navigation. For delivering of automatic content means the method of sending content without any data entry required. The process would be that the broadcast feed would send the information to the service provider and then they would use the feed in their database and have files (maybe templates) that can interpret the database and retrieve the content.

TABLE 1 compares television and traditional computers along a number of dimensions. It is very important to understand the differences in the user interface design for TV and computers.

	Television	Computers
Screen resolution (amount of information displayed)	relatively poor	varies from medium-sized screens to potentially very large screens
Input devices	remote control and optional wireless keyboard that are best for small amounts of input and user actions	mouse and keyboard sitting on desk in fixed positions leading to fast homing time for hands
Viewing distance	several meters	a few inches
User posture	relaxed, reclined	upright, straight
Room	living room, bedroom (ambiance and tradition implies relaxation)	home office (paperwork, tax returns, etc. close by: ambiance implies work)
Integration opportunities with other things on same device	various broadcast shows	productivity applications, user's personal data, user's work data
Number of users	social: many people can see screen (often, several people will be in the room when the TV is on)	solitary: few people can see the screen (user is usually alone while computing)
User engagement	passive: the viewer receives whatever the network executives decide to put on	active: user issues commands and the computer obeys
TABLE 1	Source: Jakob Nielsen, useit.com	

RESULTS

Research in literature revealed the basic rules for layout design in traditional platforms like print and the web as well as technologies supported in different operating systems and software used. The specifications for iTV and mobile applications vary for each device and the technology used is still on progress. New guidelines

are developed for each device. The author conducted case studies and interviews in order to understand the specifications and principles for layout design for each platform and how the basic design rules are affected in each case.

Case Study – Vodafone Live! Vizzavi - Greece

In order to understand the differentiations of the design for mobile screens the author researched on a Vizzavi service in Greece. The creative team was interviewed and the specifications were given from the company. Vodafone Live! is a service that runs in 4 countries so far (Germany, England, Italy and Greece). The following specifications for graphic design have been sent from the Vizzavi headquarters in England for global use.

Content, Application and Action Items

Specifications for symbols design for Panasonic GD-87

- 24 wide x 13 high pixels
- Center the image with the canvas and bottom align it vertically
- Use the full height of the canvas
- Always leave a gutter of 1 pixel on the left hand side. This ensures the image never butts against the left hand edge of the phone screen
- Anti-aliasing
- Save as GIF using the correct naming and file format conventions

Navigation Icons - Construction and Specifications

As above, except icons are right aligned horizontally within the 24x13 pixel space.

Advice

- Always use flat colours
- Always use anti-aliasing to create smooth edges

Don'ts

- Don't use graduated tones or drop shadows

Do not use large areas of blue – it should only be used for highlights

Notes

In exceptional circumstances, colours outside the Vodafone Live! colour palette can be used. For example, when creating an icon for a country flag, other colours from a standard RGB colour space can be used.

Source: Vizzavi Hellas

The author of this paper has interviewed one of the Vizzavi-Hellas creative team members, in order to understand and research the problems faced during the creation phase, the difficulties with the above specifications, the background and efficiency of the designer. The team designed the symbols of the interface, following the above specifications. The only problem they faced during the creation of the symbols was the colour limitation. They weren't briefed on the target group from the project manager but they used their past experience in order to adjust the specifications to the Greek target group taking into consideration factors like user psychology, status, age and of course culture. The testing for the application and graphics is performed in Opera Browser for best compatibility with the mobile screen. This procedure is also performed by the content management tool operators. The operators also have specifications regarding the insertion of the content and that is text, images, diagrams and logos. The images are imported in JPG format and the diagrams and logos in PNG format. The size of the images is recommended to be of a maximum width of 240 pixels. In GIF format case the maximum weight should be 23k and the maximum width should be 90 pixels. All the above are supported and recommended by the Vodafone Live phones and the limits are set to the least capable phone in the Vodafone Live service. Most of the original image files are scanned from hard copy or resized from EPS and TIFF files that have been designed for print, as most of the content is magazine articles and covers.

Questionnaires Results

Questionnaire to Designers

In order to be able to have an understanding on the way designers work in terms of the creation of the layout for screen the author questioned 30 designers, in the Greek market, working in interactive sections of publishing houses, advertising companies, new media companies and telecommunication companies. The results show the following:

Results

Distributions of educational background among the respondents: PHD = None, MA or MSc = 3, BA or BSc = 13, Vocational Institute = 12, No diploma = 2

28 out of the 30 designers asked, have been trained for print as their primary education and were asked to design for screen without any training from their company. The 2 designers remaining answered that they were sent to seminars funded by their company. From the 28 designers above, 20 answered that they were trained during their free time using manuals and books that they bought or downloaded from the web with their own expenses, 3 designers answered that they were trained with their own expenses taking courses in vocational institutes or seminars in the university, 5 designers answered that they were trained during the development of the application and by the guidance of the development team. No one found books or manuals in the public libraries.

All 30 designers were asked whether they feel ready or not to design layouts for all platforms and the results came out as follows, 14 answered yes, 2 answered no and the rest answered that they are not sure about it.

22 out of 30 answered that they feel very good about the fact that things change rapidly in the development of new applications because they learn new techniques, 8 answered that they feel happy about the rapid changes because their designs will be used in many platforms.

When they were asked if they believe that by refusing to design for a new platform, without training, they will stay out of the market 28 answered positively and the rest 2 answered that they always like to accept new challenges.

18 designers answered that it is more important for them to design a layout that will finally be used in the application developed but they don't feel very proud of it in terms of aesthetics and 12 answered that it is more important for them to design great layout that won't be used in the application developed, because it was designed the wrong way, but it will be recognizable by other "creatives" in the market as a masterpiece.

Most of the designers mentioned the fact that they try to give their "touch" in every layout even if they have to face specifications that sometimes give no margins in aesthetics. All 30 answered that they design by a combination of instinct and guides and not one or the other!

Questionnaire to Development Teams, Programmers

In order to understand the limitations in the development phase regarding the layout, the problems they face while developing applications for cross platform use and the cooperation with the creative teams 20 programmers were interviewed.

Results

Distributions of educational background among the respondents: PHD = None, MA or MSc = 5, BA or BSc = 11, Vocational Institute = 3, No diploma = 1

19 programmers answered that their relationship with the creative team during the development of the application can be described as "hostile". 1 answer was "good".

16 answered that the reason for the "hostile" relationship with the designers is because "Designers don't seem to understand the limitations of the development phase", 2 answered, "Designers are artists and not technocrats", the remaining 2 answered, "There are no specifications to imagination".

In the question "How many times have you delayed the development of the application because of bad layout design?" 100% answered "always".

50% blamed the designers and the rest blamed the project managers for the delay of the previous question.

When they were asked if they believe it would be better not to have designers in the production phase 12 answered positively and the rest negatively.

8 programmers said that they believe they are capable of designing any kind of layout and that they would have a better result, as they would follow the specifications 100%. 12 answered that designers must accept the fact that screen design has limitations the need to follow.

100% answered "Yes" when they were asked if they believe that designers should know the basics in programming languages and development limitations.

14 programmers answered that "they feel very comfortable with black screens and text only applications but they are not sure that the user feels the same", the rest answered that "they user should try to understand the limitations in the development and accept text only applications for their own convenience".

Questionnaire to Project Managers

In order to understand the way projects are being managed and the background of the project managers in terms of new technology applications the author questioned 5 project managers.

Results

Distributions of educational background among the respondents: PHD = None, MA or MSc = None, BA or BSc = 4, Vocational Institute = 1, No diploma = None

2 out of 5 answered that they attend seminars every 6 months. The content of the seminars is basically marketing, public relationships and customer care. 3 of the respondents have never attended any kind of seminar.

All 5 projects managers accepted the fact that they learn how to treat each case from the production team. They added that they have learnt many technical issues in order to avoid pitfalls in the management of the projects and the client.

When they were asked if they have made mistakes that cost money to their companies all 5 answered positively. The reason for this is the lack of knowledge in specific aspects of the development that lead to a misguided briefing to both the client and the production team. They all said that they have often made the mistake of “promising” things that were not technically possible. They solved this problem by having at least one person of the production team in the meetings with the client and by preparing FTG (Functional, Graphical and Technical) specifications that are signed by all members of the participants in the production of the application, the managers and the customer. The negative issue of this process is the time spent on preparing the FTG spec and the fact that the production team often delays the process, as they are not feeling comfortable with documentations.

DISCUSSION AND CONCLUSIONS

Designers of new technologies have to deal with “structured creativity” and they try to adjust semiology and basic design rules in new technology layouts but without past experience most of the times. They all learn new techniques of design for each technology and platform and most of the times this is achieved with the cooperation of the development team/programmers and the guidance of the specifications given for each case.

After conducting the research, the author concluded to the following basic principles that must be followed when designing for cross platform publications:

- Identify the target group and conduct research on it regarding the age, the status, interests and culture when the application is for global use and cross platform publications.
- Understand whether the application is for local or global use. In this case the designer has to deal with global concepts, in which case, the layout should be adjustable to language. In FIGURE 7 one can see the differences in the space needed for the translation of the word “Sitemap” which is so common in the English versions of many websites and the fact that it can become a difficulty in the layout design when it is translated in Greek.



FIGURE 7 – Space difference in different language versions

- Understand the platforms, the limitations and specifications for each one before starting with the design of the layout. Discuss the technical issues and limitations with the development team as the specifications for each device change on a daily basis.
- Understand the reader/user and use the appropriate language and text in menus and selection buttons.
- Design symbols that are identifiable and appropriate for different cultures e.g. using the Red Cross symbol for medical applications may not be appropriate for the Moslems culture.
- Use the appropriate colours following specifications when needed. Adopt the colour palette to the addressed culture.
- Specify the reading directions for various languages.
- While in the concept phase and briefing the designer should take active part in the specification of the content and the navigation of the application.
- Create a prototype in hardcopy before the development and test it.
- Become the user!

New technology applications layouts tend to eliminate aesthetics and good design. They are mainly based in text only graphic interfaces and the user deals with monotony and boredom while navigating. The need for good design is immediate in order to achieve applications that will be user friendly and attractive, worth spending time and money on. We all know that one picture is a thousand words but can it be that a thousand words are one picture?

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Notes

(1) For more information on where FIGURE 5 and 6 came from check out Microsoft TV at <http://www.microsoft.com/tv/working/training/online.asp#PIDITV> and click on "Planning, Implementing and Developing Interactive Television".