Creativity, Mobile Multimedia Systems, Human and Social Factors in Software: Communicability Excellence for All

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Abstract. We present a first set of results and trends in the formal and factual sciences aimed at reaching excellence of communicability for all in the second decade of the new millennium. Through a set of heuristic evaluation techniques and strategies for the analysis of communicability we present the first causes facing the presence and absence of creativity in the south of Europe, with regard to the contents for the mobile multimedia systems such as the PC tablets and the multimedia phones. Finally, a special case of human and social factors related to the web attacks is presented to foster local and international business in the multimedia publishing sector.

Keywords: Creativity, Communicability, Multimedia, Education, Human Factors, Evaluation.

1 Introduction

The current mobile multimedia systems are playing the same role as the multimedia videogames of the 90s, especially if the economic data in the European multimedia industry are considered. That is to say, they make up the vanguard of the R&D in the European ITC sector, especially in the north of the continent. Now the intersections in the multimedia context refer to the quality of the software, whereas the union on media refers to the hardware. A quality of the software that is presented to the users through audiovisual interfaces, since audiovisual communication still prevails among human beings and the new technologies of the new millennium. That is, in the second decade of the new millennium, the audiovisual and touch prevail above other means of interaction such as the vocal or the visual (movement of the components of the human eye). Although currently there are plenty of studies aimed at the cognitive models and the search of the interaction of interactive systems straight from the brain,

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the digital divide among the users makes that in the immediate future [1–5] and for cost reasons they will still use keyboards, mouse, joysticks, microphones, etc. as main means of input of the data that the CPU (Central Processing Unit) must process. In principle the creativity of the computer environment focuses on the interactive design, ergonomics, the potential of the operating system, the variety of applications (commercial or not), the compatibility of the different files that make up the data bases, telecommunications, etc. [7]. Some of these components are visible to most of the users of those devices, for instance, the icons of an interface. However, the time used to locate a street on an automotive navigation system (satellite navigation system) makes the different types of users agree, when the issue of the quality of the interactive system arises. The quality of the system is inversely proportional to the time used to find the digital information that one is trying to find. Another element linked to quality is the originality of the interactive system starting by the design categories. Currently we are working with the following design categories: presentation or layout, structure, navigation, parochialism, connection and content. The interested reader may delve into their main characteristics in the following bibliography. Now the latter of them, the content, is where one of the sources of conflicts is located when we speak of human factors in the era of the expansion of communicability, such as the lack of excellence in the contents of the online and/or offline interactive systems. The excellence of those contents stems not only from the multimedia industrial sector, but also from the university educational context. That is, those university studies akin to communicability, usability, interactive design, software, hardware, telecommunications, etc. which should train the future professionals of the sector, with wide cardinal or essential tools of knowledge not only in the present or the past, but also in the immediate or short term future, show that there is clearer hierarchy in the multimedia information architecture. That width of knowledge must be vertical and horizontal. Vertical when there is a specialization of the new technologies (videogames programming, multimedia engineering, interactive systems design, among other examples) without forgetting horizontality or transversality of knowledge and/or experiences to reach a 360 degrees vision of the main formal and factual sciences of those degrees.

2 Creativity and Heuristic Evaluation

From the point of view of the “genius conception” of creativity creative [7] thinking is regarded as an extraordinary occurrence which demands explanation. The reason for such statement is a consequence of the notion that creative thinking requires an explanation because it is taken for granted that humans do not have the need to think creatively in the course of the daily events, such as the research centers, university education, technology transfer, industrial design, etc. in many places of Southern Europe [8]. Not for nothing the hardware industry in multimedia mobile phones of the last generation is located in the Scandinavian peninsula, for instance. That is, that in the working life of those places everything is a trivial series of common events, which are familiar and which can be dealt with without resorting to creative thinking.

Theoretically, only in extraordinary circumstances, such as the global financial crisis, it is necessary to resort to creative thinking. These are the circumstances that make the best of human thinking emerge and it is this superior way of thinking which currently demands a greater attention, from the point of view of the analysis of the social sciences, including the economic aspect. An analysis of the social sciences which reveals how in that geographic environment positive creativity is not applied towards the ICT (Information and Communications Technology), but rather to the destructive human and social factors. Our work has been based on the techniques and methods of the social sciences, software engineering, specially software quality, descriptive survey and the adaptation of works by Nielsen, J. [9] [10], Mehlenbacher, B. [11], Wiklund, M. [12] They make the following classification of methods and techniques which complement the notions stemming from the social sciences, for instance: heuristic evalution, pluralistic walkthroughs, the Wizard of Oz technique, and direct observation [9].

The set of techniques and methods has been applied to the universe of study of online information, such as university websites and digital newspapers of Southern Europe and Latin America. The period of analysis starts in 1990 down to our current days. The analyzed university websites in Southern Europe have been randomly chosen, through a draw, in regard to a quality attribute turned into metrics at the end of the first decade of the current century, such as credibility, transparency and accessibility of the information in the university portals (figure 1) [13]. Reviewing again the portals that showed a low quality and bearing in mind the design breakthroughs stemming from the Web 2.0 it has been seen that the quality still remains low in 85% of the analyzed cases in the 2007–2008 period. These universities have again been the object of study from the point of view of creativity, for instance. The universe of study has been widened to other universities in the American continent. Consequently, our universe of study in the current work is made up by the universities in figure 6.

Fig. 1. The value scale goes from 10 to 0 (10 being the highest mark and 0 lowest score) for example: opaqueness of the portals information universities in the last lines

3 Multimedia Educational Mercantilism versus Excellence

The multimedia educational mercantilism in public, private, mixed or hybrid universities (the latter widely described in [14]) fosters and spreads the linguistic formula "educational excellence", not only in the local environment, but also globally with the virtual campus, e-learning, etc. Now this linguistic formula lacks veracity when in the local context we have realities such as one of the highest unemployment rates in a continent (figure 2), the plagiarism in the tools aimed at education (figure 3) or the obtainment of university diplomas such as a master or a PhD degree (figures 4 and 5).

Fig. 2. Spain's unemployment crisis ranges (almost six million out of work). The Spanish educational model is very negative. Digital newspaper –El Pais (www.elpais.com), 01.24.2013.

Fig. 3. The use of plagiarized material for education (University of Carlos III, Spain) shows the total lack of interest towards the excellence of the institutional image of the university centre. Digital newspaper – El País (www.elpais.com), 03.22.2012.

Fig. 4. This example shows the total lack of controls in the issuing of titles at the highest academic level in the German university system (PhD). Digital newspaper –El País (www.elpais.com), 02.09.2013.

Fig. 5. A candidate to prime minister who withdraws from the Italian elections (2013) because he inserts in his curriculum online a master he never got in the U.S.A. or two B.A. in Italy. Digital newspaper –Il Fatto Quotidiano (www.ilfattoquotidiano.it), 02.20.2013.

4 Syllogisms and the Union of Negative Human Factors

One of the disadvantages of the main Latin languages is the wealth of vocabulary when it comes to plagiarize contents without counting the different regional dialects or languages that there are for instance in the south of Europe. The linguistic factor fosters what Saussure called the belfry spirit which is opposed to the strength of the interchange or interrelations [15]. That is, that two sets of forces of a contrary effect operate over any language at the same time. The belfry spirit is strongly traditionalist, redolent of localism and locked, and it prompts the resistance by the speakers to any use that is alien to their own tradition. While the strength of interchange spreads the linguistic changes from the moment in which they take place to avoid that a communication blockage occurs, that is, something that would be unavoidable if

every subgroup of speakers limited themselves to their own habits or transformations, as it happens in the first set. According to Saussure [15], these two opposite forces make a language keep its balance and stability over time. Traditionalism as well as the ability to accept novelties are necessary for any language to play its role in human societies. Now from the 90s onwards the mercantilism in the multimedia sector in the Southern Mediterranean linked to the belfry spirit generated parochialism in the context of the new technologies. All those professionals who did not develop their activities in the context of the training and/or experiences such as the graduates in mathematics, fine arts, physics, industrial engineers, etc. with the momentum of the offline multimedia first and then online automatically styled themselves as "experts" in e-learning, scientists in computer graphics, masters in interactive design, specialists in auditing of multimedia contents, and a myriad syllogisms stemming from the wealth of words in the lexicon of the Latin languages. In the first decade of the new millennium they were already self-styled "professionals" in usability engineering and design creativity. Currently all of them have become "innovators". Obviously, if all these self-denominations were true only in 1% of cases, the unemployment in figure 2 and the total lack of controls in universities (figures 3, 4, and 5) those societies would be one of the highest in the developed world. These figures indicate the presence of educational antimodels in university sector [8]. Therefore, creativity and innovation do not exist in those communities with the data and the statistic figures shown in figure 2, for instance.

In others words, from a sociological perspective related to software engineering and the new technologies, some of the human factors are interrelated with the working place conditions, such as the stability of the academic and non-academic staff, whether they are local or foreigners. For instance, in the interactive design team for multimedia products with a global diffusion, the more multinational the group is, the more integrated will be their members. In those work groups and with the latest breakthroughs in interactive technology (hardware and software) which cut down to the minimum the distance or feedback factor of audiovisual communication in few seconds, good results can be obtained in little time and on top of that saving costs. However, the only exceptions to that reality is that aimed at the educational policy where some European professionals have been 100% integrated to the work teams of Latin American private universities (religious) with the same working conditions as the local workers (a common denominator in almost the whole American continent, for instance). Now sometimes also are generated atypical examples of creativity or educational antimodels inside the set of the exceptions. An example are the agreements among Latin American and European universities. These anomalies inside the international educational context are due to the fact that the governing bodies of the universities are more concerned in signing the highest possible number of international covenants, instead of developing their own educational models or the programs of study according to the current and future demands of the labor market, eradicating endogamy from their classrooms, eliminating the use of the university facilities for private economic purposes of some students, professors, etc.

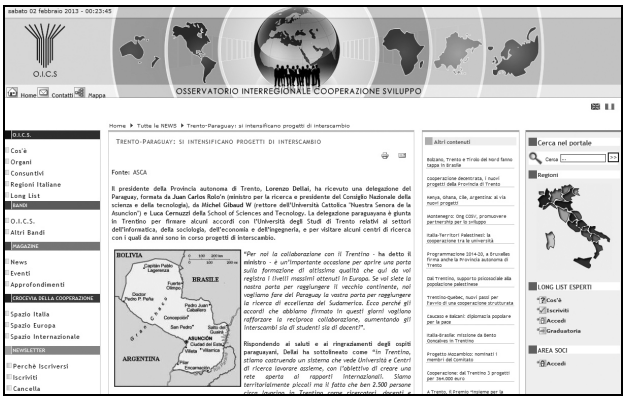

Fig. 6. Signature of a collaboration agreement between an elitist university of Paraguay (Our Lady of the Assumption Catholic University) and the University of Trento (Italy) –www.oics.it

In the signing of agreements for student and/or professor interchange can be seen not only how these are activities where politics prevail over the education and/or research. For instance, the in situ presence of a Paraguayan education minister in a European university to sign a few simple documents. This reality shows the existence of professors (as a rule, in private or religious universities) who foster parochialism inside and outside the borders of the country to which they belong. That is, while the new technologies offer a myriad means for the electronic and long distance signing in the 21st century, the taxpayers of nations like Paraguay still have to pay travels and stay fees for some signatures on pieces of paper. This example makes apparent to what extent an European dynamic persuader in the university context may negatively influence the future of a Latin American community which is located thousands of kilometers away from his own land, prompting technological backwardness outside the European borders, although locally they present themselves as promoters of technologies for the physically disabled, eradicators of the digital divide with the One Laptop per Child (OLPC), etc. Evidently, all these examples, where creativity is equal to zero because it is only about adding elements which already exist inside or outside Europe.

5 How Can Destructive Relationships of Creativity Be Detected?

Answering a rhetorical question always demands previous knowledge and/or experiences in formal and factual sciences. In the case of our question, we can resort to the flowchart of the logical programming. The notions of international design can also be used such as the traffic signaling for those people who do not belong to the group of programmers, computer scientists, etc., and the graphic information in the printed press with an analog support. A combination is ideal for the analysis of web attacks with the purpose of fostering the local and international business in the multimedia editorial sector. The attacks in the web generally are not carried out

randomly but they respond to the guidelines of parochialism (figure 7). In the case of the study we can see how the origin may go back to the 90s, with an initial web attack in the spring of 2012 and a constant increase until the summer of 2012 (web attack "ubi et orbi" from Springer in Germany [16]). The dotted lines depict interrelations for the attacks that are maintained and/or activated on a systematic basis. The shaded rectangles indicate the places from which the attacks are continuous. Those which have the shading on the upper part signal the universities, organizations and/or publishers where the ethical limits of trade, the scientific editorial sector and the epistemological principles of the sciences have been left behind.

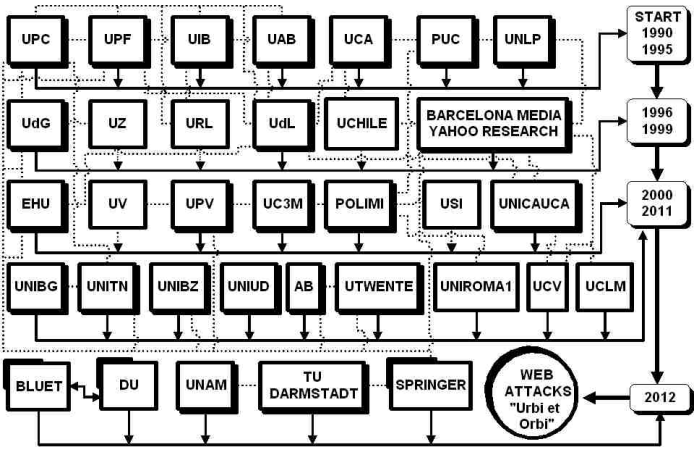

Fig. 7. Unidirectional and bidirectional relationships which stay across time (straight lines) and relationships which are activated in certain moments (dotted lines)

For privacy reasons in the diagram have been inserted the acronyms name (online website) of the public, private (or religious), hybrid educational institutions and private, public and hybrid firms: Autonomous University' of Barcelona (UAB, Spain), Bangladesh University of Engineering and Technology (BUET, Bangladesh), Dhaka University (DU, Bangladesh), Free University of Bozen-Bolzano (UNIBZ, Italy), Fundació Barcelona Media – Yahoo Research (BARCELONA-MEDIA, Spain), National University of La Plata (UNLP, Argentina), Our Lady of the Assumption Catholic University (UCA, Paraguay), Polytechnic University of Catalonia (UPC, Spain), Polytechnic University of Valencia (UPV, Spain), Pompeu Fabra University (UPF, Spain), Pontifical Catholic University of Rio de Janeiro (PUC, Brazil), Pontifical Catholic University of Valparaiso (UCV, Chile), Portuguese Open University – Universidade Aberta (AB, Portugal), Ramon Llull University (URL, Spain), National Autonomous University of Mexico (UNAM, Mexico), Springer (Germany), Technical University of Darmstadt (TU-DARMSTADT, Germany), Technical University (Politecnico) of Milan (POLIMI, Italy), University Castilla-La Mancha (UCLM, Spain), University of Twente (UTWENTE, the Netherlands), University of Bergamo (UNIBG, Italy), University of Carlos III (UC3M, Spain),

University of Cauca (UNICAUCA, Colombia), University of Chile (UCH, Chile), University of Gerona (UdG, Spain), University of Lérida (UdL, Spain), University of Lugano (USI, Swiss), University of Mallorca (UIB, Spain), University of the Basque Country (EHU, Spain), Sapienza – University of Rome (UNIROMA1, Italy), University of Trento (UNITN, Italy), University of Udine (UNIUD, Italy), University of Valencia (UV, Spain), and University of Zaragoza (UZ, Spain).

The directional and bidirectional interrelations in straight and dotted lines make apparent the existing conflict between secular and religious (or private) education and the profit purposes stemming from that education and/or interrelation with the working sector, under the neutral formula of knowledge transfer between the university and the industry, and vice versa. In other words, a set of destructive relationships for creativity in the development of the multimedia systems. The diachronic and synchronic analysis makes apparent how the parochialism of the educational sector is transferred to the business sector. The inverse sense is detected in the figure when a member of the university sector has switched to the business sector, and yet keeps online his false allegiance to the university sector. This dynamism in the constant changes of status of the destroyers in contrast to the creative constructors, leads us to the notions enounced by Piaget for the assimilation and accommodation to explain the adaptation of the organisms to permanently variable events. In Piaget's theories, the first step to face any event consists in assimilating said event to the knowledge one has, that is, trying to make fit in the best possible way the knowledge into what one knows. In our specific case they are true data stemming from experiences accumulated across time. Later on, according to Piaget, it is necessary to accommodate the answer to the novel aspects of the event (surprise attack in the Internet in the month of August of 2012) and study of the human interrelations of the attackers along time), thus bringing forth a new response which is adapted to the new situation (elaboration of a set o techniques and methods for the detection and eradication of the negative human and social factors in the ICT, prevention of the cyber destroyers from enjoying immunity with parochialism, and fostering of the cyber behavior control).

6 Conclusions

Although the m-commerce (multimedia mobile phones and the PC tablet) is edging out the e-commerce (personal computers), the original human and social factors in the educational sector and then taken to the industry and commerce seriously damage the quality of the goods and services in the south of Europe. Factors which directly and indirectly also affect the creativity of solutions in the face of the new challenges of software and hardware communicability for the multimedia mobile phones. The social factors make the best prepared people for the ICT sector be systematically excluded from the educational context, one of the main cornerstones of the developed societies, with consequences for the current and future generations of users of interactive systems such as the high unemployment rate and the exponential increase of the digital divide phenomenon. The parochialism implemented in the 90s is not only

responsible for the unemployed figure 2 or the lack of creativity, although those societies are allegedly crammed with ICT innovators, but also for the lack of communicability in the software developed for the interactive systems. Besides, it has been established in the analyzed example how we are in the face of a global ballooning phenomenon of little transparent human interrelations between the university, the industry and/or the firms. All of this exists under the caption of the invisible excellence. These interrelations like the ballooning phenomenon are open lines for future research.

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