

## **The Usability Reference Model: Axiomatic approach to the Usability discipline**

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### **Abstract:**

The lack of the strict conceptual basis, the terminological disorders and misunderstandings and the difficulties of the documentation process, these all obstruct more and more the portal building process in all of its phases: in the design, the implementation, the use, the support (e.g., to understand the user reflections), the audit, and in the training.

Our analysis led to a Usability Reference Model, which gives us a map of notions. Based on it, we can build a strict conceptual basis for the usability discipline, avoid the subjectivity, and we formulate the requirements of the usable portal.

The main gaps of recent system design practices are in three areas: the notional/conceptual correctness, the ergonomics, and the secure data management of the user interfaces. In the popular world the most important base of usability is the ergonomics, while in the professional world it is the semantics.

Although we are over-packed with CMS software technologies, none of them can be thought of as a technically thought-out, theoretically established, exact technology. Based on the URM we can canonize the requirements of a high quality CMS technology.

### **Keywords:**

e-service, portal, software technology, Internet, semantics, ergonomics, IT security, usability, ontology

### **Terminology:**

*Portal*: 'electronic content', 'e-content', 'electronic service', 'e-service', 'portal', 'internet service' are equal in our approach. We use the *portal* terminology for all of them.

*ICT platform*: standard software elements of the commerce desktop (operating system, authorizing tools, file utilities, setup tools, network tools, browsers, offices, etc.).

*Domain*: the specialty, the portal deals with. *ICT platform* itself is counted to be a standard domain.

## Introduction

Usability is the new and growing area of the ICT technology, namely of the information building for interactive use. Our Reference Model, in short the URM, is basically intended to elaborate a *map of notions*, belonging to this area – in other words, to elaborate the ontology of the usability discipline.

Now days we are over-packed with CMS software technologies, developed by proprietary and open software industry, and used/distributed by system integrators. But, none of them can be thought of as a technically thought-out, theoretically established, exact technology.

On the other hand, the usability discipline by now has no strict conceptual basis – it has no proper set of terminologies and categories to tackle the essence of the usability. The great brains of the usability, Nielsen [1], Krug [2], Shneiderman [3] gave practical methods to evaluate the portals, and, as Brinck [4], to design usable portals. Their focus is basically the e-business; their approach is essentially heuristic.

The ISO standards are hardly referenced in the publications, their impact is low. Bevan [5] gives an introduction into their philosophy.

Our analysis is for product quality, not for the design process. Moreover, its philosophy is mostly incompatible with the recent CMS practice, so it implicitly also establishes a new CMS philosophy.

Our ontology is basically intended to have a map of notions, to promote the research of the nature of the usability, and to be able to discuss the *requirements of usability* of ICT services. *Be the usability a scientific area with strict conceptual basis*. Further goal is to build a pilot software technology, complying with our requirements.

Our ontology so far is informal, and is not semantics, but a simple dictionary of keywords (notions) of at most 2-3 levels.

### ***The scope of our research***

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#### **1. The Model Hierarchy**

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## **1.0. Physical ergonomics' layer**

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### **1.1. Perceivability (readability, audibility) layer**

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### **1.2. Data element layer**

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### **1.3. Informatics semantics' layer**

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### **1.4. Domain semantics' layer**

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### **1.5. Synopsis layer**

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### **1.6. Process control layer**

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### **1.7. Conduciveness layer**

## **2. The conceptual correctness of user interfaces**

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## **3. Discussion & conclusions**

Why are all these for? The semantics help the *roles* to communicate exactly to each other on the portal during the whole life-cycle of it. See, for or example, some situations.

### **a) Conceptually established system planning**

- At the very beginning of the development, in the 'conception making' phase (see *Life cycle's ontology*) the 'designer' (see *Developer's ontology*) has to

make the *Domain role's ontology*, and to bind it to the *User role's ontology* as a part of the conception plan.

- In the 'technical planning' phase the 'designer' makes or purchases the *Domain's ontology*.

## b) Role-missing avoidance

The **role-missing** is one of the most disturbing effect of recent software technologies: the 'user' is given an information concerning the 'system operator', *without understanding that it concerns to somebody else, so being misled* – and the 'system operator', however, is not informed.

- The 'designer' and 'programmer' are made think exactly and construct, annotate the *items* obviously. Every role needs its own information.
- The 'content\_builder' role will be separated exactly from the previous 'designer', 'programmer', 'architect', etc. roles.
- In the 'using' phase the meaning of an *item* in the portal is obvious. The annotations can be seen by some roles of users.
- The 'audit' functions will be clear, unambiguous.

## c) Semantic content table generation

The lack of the conceptually correct content table, without omission and redundancy is the other disturbing effects of the professional services.

- The ability to **generate semantic based content tables** or site maps arises. It can be made interactively, even by any 'user'.

All these make up a new content design methodology, based on URM philosophy. This formal, conceptually exact semantic way is a demand in professional world, and not in popular world.

[1] Jacob Nielsen: Designing Web Usability, 2000

[2] Steve Krug: Don't Make Me Think, 2006

[3] Ben Schneiderman: Web Design & Usability Guidelines, 2004

[4] Brinck-Gergle-Wood: Usability For The Web, 2002

[5] Bevan: International standards HCI, 2006

[http://www.nigelbevan.com/papers/International\\_standards\\_HCI.pdf](http://www.nigelbevan.com/papers/International_standards_HCI.pdf)

[6] James Garrett: Customer Loyalty and the Elements of User Experience, 2006