A Methodology of the Decision Support Systems Applied to Other Projects of Investigation

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INTRODUCTION

One of the greater worries of the investigators is the scientific methodology to follow in their Works. In this article there presented a methodology that arose in the academic world, as a need, to facilitate the development of the DSS. This methodology, by its characteristics, received the name Integrated-Adaptable Methodology for the development of Decision Support System (IAMDSS, in Spanish, Metodología Integradora-Adaptable para desarrollar Sistemas de Apoyo a las Decisiones [MIASAD]). Besides, to be able to integrate other methodologies, an aspect that characterizes to the IAMDSS is its flexibility, differing this to the great majority of existing scientific methodologies, that in general they are characterized for a high inflexibility.

Of everything previous, the principal contribution of this article is framed in presenting IAMDSS and in showing as it is useful to develop projects of investigation in different fields of the knowledge and where the final product (FP) is not a DSS.

As methodology to reach the objective proposed makes use of the own one IAMDSS (García, Hernández & Hernández, 2011, 2012; Hernández, García, & Hernández, 2011, 2012), upon making use of some of its essential steps:

1. To define the problem that, as it was indicated on having commented on the contributions of this article, it is to present IAMDSS and to show as it can be used in other works of investigation that not necessarily they conclude in a DSS,
2. To prepare the first prototype, where it will remain established that is a matter of an article of investigation to be published and which should reflect the objectives proposed,
3. Obtaining data, in this case on IAMDSS and its applications not DSS,
4. Establishing the alternatives, that would be the different options that can follow to present IAMDSS and to show some of their applications,
5. Evaluate alternatives, considering the facility of presenting and to show the use of IAMDSS,
6. Selecting the best alternative, as product of previous evaluation process, and based on the secondary objectives, tacit or explicit, being considered,
7. Implementing the best alternative, there must be guaranteed the mechanisms, which allow to realize a suitable presentation of IAMDSS and the illustration of it use in fields foreign to the DSS and
8. Establishing controls, Establishing the mechanisms, probably indicators, that permit to recognize if the alternative selected, continues being valid in the course of the time.

With regard to limitations and reaches, in this article no work of field will be carried out, but the presentation of the IAMDSS will do, following a previous work

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(García, Hernández, & Hernández, 2011) *likewise its use will be shown, upon commenting works, that already have been presented in events or published in journals and scientific books* (García, Hernández, & Hernández 2012; Hernández, García, & Hernández, 2011, 2012).

BACKGROUND

At present there is a lot of information about methodologies associated with the Decision Support Systems (DSS), only among the ones that they are related or they do mention to the Group Decision Support Systems (GDSS) they can be cited: Hevner et al., (2004); Michinov and Primois, (2005). Nevertheless was not this the situation to ends of last century, where it was not easy to distinguish a methodology directed to the DSS. This last reason forced the creation of IAMDSS.

The origins of the IAMDSS, they are given in the academy, by need of the students of a private university to the east of the city of Caracas. These students of the Systems engineering School, when they prepared their special Works degree, in general they developed a DSS. In particular DSS of relative low importance developed by one or two students and with excessively limited times. All this obliged them to need a methodology of work, very prompt.

IAMDSS in addition to being ideal for the control of works in team stands out for the facility that it presents to integrate and to adapt elements of other methodologies and methods such as: Operations Research for decision making (Thierauf & Grosse, 1970); Prototyping (Pfleeger, 1998); Spiral model (Sommerville, 1992); System Development Life Cycle (SDLC) (Hodge & Clements, 1986); Unified Modeling Language (UML) (Booch, Rumbaugh, & Jacobson, 1999); Waterfall model (Pfleeger, 1998). Many of the quotes are longstanding, by which have been included only the most representative and for details it is recommended to check the references of García, Hernández, & Hernández, 2011.

Even the IAMDSS it is opened to integrating methodologies of more recent times, as some of the mentioned by Escalona, Mejías & Torres (2002): Hypermedia Design Model (HDM); Relationship Management Methodology (RMM); Rational's Unified Process (RUP). And other as the Research Methodology of *Ofner, Otto & Österle (2012)*, or RIMER+ *(Calzada et al., 2013*), Agile Development Methodologies (Nerur, Mahapatra, & Mangalaraj, 2005), in particular SCRUM Methodologie (Livermore, 2008). What converts to the IAMDSS, just as they refer Foth and Axup (2006) or Gregor and Jones (2007), in which would be able to call a meta-methodology.

Besides, to be able to integrate other methodologies, an aspect that characterizes to the IAMDSS is its flexibility, differing this to the great majority of existing scientific methodologies, that in general they are characterized for a high inflexibility. This flexibility allows to jump or to include steps, which gives it a big facility of use and an almost universal application. In this article one wants to emphasize this big field of applications of IAMDSS.

On the other hand many of the developed systems it was waited that they were useful in the education of subjects of different topics. To have the control of these works and to guarantee a culmination on time and with a high academic quality, one started developing a particular methodology, which was evolving and being perfected. This methodology was the one that turned, in the course of time, into IAMDSS.

At the end of the first decade of this century, IAMDSS had been used in more fifty special Works degree and in other scientific works to be presented in congresses and published in books and journals. Of this experience it is possible to deduce that the IAMDSS had been consolidated, as a methodology that was allowing to complete works of investigation. Between its principal characteristics it was consisting of taking elements of other methodologies for the system development and to be quite flexible to be adapted to different situations. And, as previously it was indicated, from it flexibility and adaptability it name arose. Although, it is important to attract attention, that not all the Works degree and the articles presented and published, they were DSS.

For the year 2011, there could stand out three groups of conditions or practices, which were characterizing IAMDSS (García, Hernández, & Hernández, 2011). This characterization of IAMDSS can observe in the Figures 1, 2 and 3. In the Figure 1 there stand out all those aspects that had to be born in mind to guarantee that the obtained DSS, it was efficient and effective on having been used in the teaching. In the Figure 2, there are reflected four points that had to appear in every meeting, which were allowing having a clear vision of how the project of investigation was developing. In the