Reprint **ISSN 1997-2571 (Web Version)**

Journal of Innovation & Development Strategy (JIDS)

(J. Innov. Dev. Strategy)

Volume: 6 **Issue: 1** **April 2012**

J. Innov. Dev. Strategy 6(1):94-97(April 2012)

A STUDY ON THE DEVELOPMENT AND APPLICATIONS OF COMPUTER SIMULATION AND SYSTEMS DEVELOPMENT

S. ALAM AND A.K.M.B. HOSSAIN

An International Scientific Research Publisher

Green Global Foundation©

Publication and Bibliography Division
100 Leeward Glenway
Apartment # 1601
M3c2z1, Toronto, Canada
E-mails: publication@ggfagro.com, editor@ggfagro.com
http://ggfagro.com/ejournals/current issues

GGF
Nature is Power

JIDS** issn 1997-2571, HQ:19-10 central place, saskatoon, saskatchewan, s7n 2s2, Canada

ISSN-1997-2571 (Online)
J. Innov. Dev. Strategy 6(1):94-97(April 2012)

A STUDY ON THE DEVELOPMENT AND APPLICATIONS OF COMPUTER SIMULATION AND SYSTEMS DEVELOPMENT

S. ALAM AND A.K.M.B. HOSSAIN

Department of Computer Science, King Khalid University, Abha, KSA

*Corresponding author: Muhammad Shamsul Alam or AKM Bellal Hossain, E-mail: alam_294@yahoo.com, drbellalce@gmail.com
Accepted for publication on 12 March 2012

ABSTRACT

Alam S, Hossain AKMB (2012) A study on the development and applications of computer simulation and systems development. *J. Innov. Dev. Strategy*. 6(1), 94-97.

At present, the term digital and simulation systems has become part of our everyday vocabulary because of the dramatic way that digital techniques have become so widely used in almost all areas of life. The findings of this study will be directly utilized in improving computer use, development of digital agriculture in Bangladesh. The objective and the outputs have been set exercising one 4X4 (activities, means of narrative statement, measuring indicators, verification and assumptions) Log frame matrix. The major areas of the project are mentioned as identifying the lacking of skill in system selection and maintenance, knowing the gap of knowledge in system identification and installation, specifying the appropriate simulations. The lack of skill in hardware selection use and maintenance, the gap of knowledge in software identification and installation, specifying the appropriate use of computers will be specified. The findings of the study will be directly utilized in improving computer use, development of curriculum for employment based training, a logical frame work may also be exercised for easy understanding of the whole project activities and the LFA should include the means of narrative statement, measuring indicators, verification and assumptions.

Key words: *digital, MAGS, OLAP, simulation, SIMSTAT, SOLAP*

INTRODUCTION

Use of computer in all countries is increasing at an alarming rate throughout the world. It rightly includes simulation studies from the very beginning especially for the biotechnical dynamic research which were lead to developmental and extension works. In the context it may be stated the effectiveness of the computer aided analytical works demand simulations very frequently depending on its output integrations. Output analysis is a very relevant step in a simulation study. This step is necessary to test out different ideas and to learn about the simulation model and the corresponding simulation system. A user needs to better understand the simulation model's output, and consequently, needs appropriate techniques to analyse the simulation output. Some researchers such as (Seila 1992; Alexopoulos *et al.* 1998; Alexopoulos 2002; Sanchez 2001) propose different analysis techniques for simulation outputs. To overcome this difficulty, (Grier 1992) proposed a graphical statistical analysis technique which can be used to analyse simulation outputs. The visual display of the results quickly conveys information about the simulation model. Users who rely on simulations to support their decisions prefer graphical analyses because they are easy to understand. (Blaisdell *et al*. 1992) proposed SIMSTAT, which is a tool to analyse simulations based on a statistical graphical analysis technique and which is combined with several discrete-event simulation tools. Using statistical graphical analysis is efficient for event-discrete simulations or other kinds of simulations that do not deal with spatial or geographic data. However, for certain Geo-Simulation (GS) fields such as Urban Simulation (US) or Multi-Agent Geo-Simulation (MAGS), spatial data become an important issue for decision-makers. In such simulation fields, a classical analysis technique based on tables and statistical graphs is too limited for spatial analysis: no spatial analysis, no spatial visualization, no map-based or cartographical exploration of spatial data, etc. Multi-Agent Geo-Simulation (MAGS) has a great potential when it comes to explaining the subtle interactions of heterogeneous actors in complex social systems taking into account the geographic aspect of the simulation environment. The characteristics of the agents (autonomy, social ability, pro-activeness, advanced spatial behaviours such as perception, navigation, and memorization, etc.) and the spatial features of the simulation environment make MAGS an attractive approach to develop simulations of complex systems. Generally, simulation applications generate outputs which need to be interpreted by the users. The huge volume and the complexity of these outputs, which a big part of them is spatial, make them difficult to be interpreted and analyzed by the users. In order to analyse these outputs of simulations which are performed in spatial environments, we need more sophisticated analysis techniques, which can be used to analyse and explore complex simulation models and outputs involving geographic data. These analysis techniques must also be compatible with users mental models and must generate analysis results that can be easily exploited by users. Consequently, the traditional statistical or mathematical analysis techniques are less suited to analyse Geo-Simulation outputs because they are less efficient to analyse and explore the spatial aspects of the simulation outputs, which are very important for a Geo-Simulation. After an in-depth comparison of several analysis techniques and tools (Seila 1992; Blaisdell *et al.* 1992; Grier 1992, Kelton 1997; Alexopoulos *et al.* 1998; Sanchez 2001; Alexopoulos 2002) we found that the most appropriate one for simulation outputs is OLAP. According to the studies made on the sector the following problems were found to dominate the situation and which might hindering the progress computer systems development, are mostly expected to be related to the lack of skill in hardware selection uses and maintenance, lack of knowledge in software identification and

installation, under-use of Computers due to lack of skill, Intensive use for games and viewing films/festival documents, Failure in identifying appropriate brands and accessories for a specific purpose.

Considering the above findings and literature demand it is stated that the study proposed here to analyze the computer's system use status in the country may highlight one or more of the situation when the simulation and integration activities including software and hard ware systems are in concern. The major objectives of the study are identifying the lacking of skill in system selection use and maintenance, knowing the gap of knowledge in system identification and installation and specifying the appropriate simulations.

Expected results are the lack of skill in hardware selection use and maintenance, the gap of knowledge in software identification and installation will be known and the specifying the in the appropriate methods of using Computers will be specified. The above objectives have been set studying major problems now hindering the appropriate use of computer in most organizations.

The problem may have deep roots in the issues of knowledge gap and lack of scope for skill development due to incomplete curriculum and syllabus. Thus a comprehensive study will be made to identify the right causes and suitable practical solution for use by the beneficiaries. The findings of the study will be directly utilized in improving computer use and may be used in the development of curriculum for employment based training. The outputs may be checked for success of the project activities. A logical frame work may also be exercised for easy understanding of the whole project activities. The LFA should include the means of narrative statement, measuring indicators, verification and assumptions.

METHODS AND MATERIALS

The methods and materials of the study have been selected as per objectives and outputs of the research. The objectives of the study have been set studying major problems now hindering the appropriate use of computer in most organizations. The problem may have deep roots in the issues of knowledge gap and lack of scope for skill development due to incomplete curriculum and syllabus. Thus a comprehensive study will be made to identify the right causes and suitable practical solution for use by the beneficiaries. Questions were set for practically judging the knowledge and skill of the technical operators and also on the basis of their technical curriculum available with the participants. Then their scores were correlated with their answer given during interview. The final conclusions will be drawn considering all these factors. The study was repeated in case of confusions.

Working Steps: The following steps are follows for the system development for digital simulation and prepare questioners for all the steps.

- Identifying the lacking of skill in hardware selection and maintenance.
- Knowing the gap of knowledge in software identification and installation.
- Specifying the inappropriate use of Computers.
- Studying and recommending curricular matter ensuring wider use of computers.
- Identifying appropriate brands and accessories of Computers for a specific purpose.

Following questioner for the Identifying the lacking of skill in software identification and maintenance.

Personnel information

Name of Interviewee----------
Age----------
Address----------
Qualification----------
Training received----------

Scoring up to 10 as per correctness of the answers for each item, Total score 100 each item.

Questionnaire on use of the Computer. Done on the basis of the findings of the above surveys and interpretations. The followings guidelines are follows for the questioners.

Software	Computer use	Compatibility
1. Office	1. Word\Office	1. Mother board
2. Page formatting	2. Video	2. Processor
3. Graphics: Illustrator	3. Games	3. Combo
4. Photoshop	4. Anti Virus	4. RAM
5. Corel draw	5. Make up	5. ROM
6. Excel	6. Internet	6. Camera
7. Access	7. Website	7. Storage cards
8. I-Film edit	8. Setup	8. Card reader
9. Video studio	9. Recording	9. Laptop
10. Video conversion	10. Scanner	10. Infrared\blue tooth

RESULT AND DISCUSSION

The detailed results of the study were summarized and given in the following tables and graphs and described in this section.

Table 1. Understanding (% respondent) of Hardware to be used for simulation

	Computer Engineers	Diploma Computer Engineers	Certificate holders	Short term training
Office	67	75	88	93
Use of package	72	79	83	98
Graphics	37	51	68	95
I-Net	91	67	53	22
Programming	56	35	12	3
Simulating	11	9	2	1
Compatibility decision making	42	45	26	21

Table 2. Understanding (% respondent) of software be used for simulation

	Computer Engineers	Diploma Computer Engineers	Certificate Holders	Short term Training
Office	76	71	48	33
Use of Package	73	78	87	92
Graphics	32	41	78	85
I-Net	93	77	43	17
Programming	51	37	10	1
Simulating	7	5	1	1
Simulated Operation	19	11	1	1

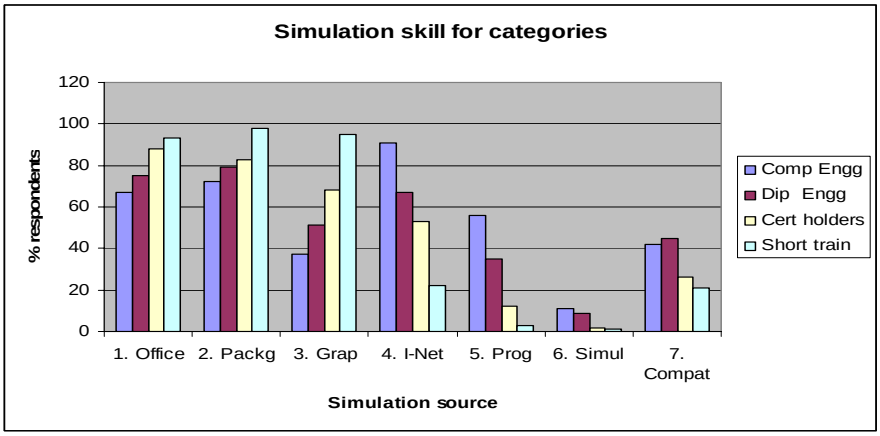

Fig. 1. The simulation score for the hardware and simulation skill for the categories

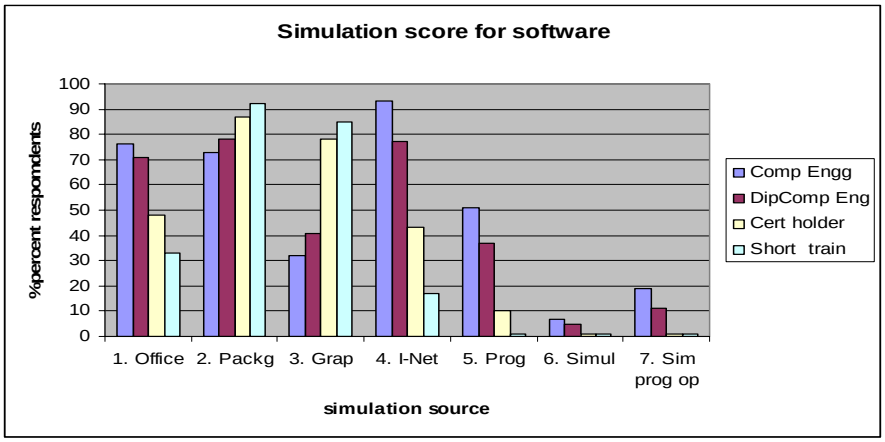

Fig. 2. The simulation score for the software and simulation skill for the categories

CONCLUSION

In this paper it is presented how we can improve simulation output data analysis using the OLAP (On Line Analytical Process) analysis techniques. We also showed how we can use an extension of the OLAP technique called SOLAP (Spatial On Line Analytical Process) to analyse spatial data generated by simulations that involve spatial data. Based on a Multi Agent Geo Simulation prototype, which simulates human shopping behaviour in a shopping mall. With this illustration we saw how it is easy and efficient for the simulation's users to use multidimensional techniques such as OLAP-SOLAP to analyse non-spatial and spatial data generated by a Multi-Agent Geo-Simulation. In the future, the OLAP-SOLAP analysis techniques will be applied in order to analyse non-spatial and spatial data generated by other Multi Agent Geo Simulation prototypes in various application domains. This will help verify the applicability of the proposed approach in different contexts of use.

REFERENCES

Alexopoulos C (1998) Advanced Methods for Simulation Output Analysis". Proceedings of the 1998 Winter Simulation Conference, Washington, USA, December 13-16, 1998.

Alexopoulos C (2002) "Output Data Analysis for Simulations. Proceedings of the 2002 Winter Simulation Conference", California, USA, December 8-11, 2002.

Blaisdell WE, Haddock J (1992) SIMSTAT: A Tool for Simulation Analysis. Proceedings of the 1992 Winter Simulation Conference, 1992.

Grier AD (1992) Graphical Techniques for Output Analysis. Proceedings of the 1992 Winter Simulation Conference, 1992.

Kelton DW (1997) Statistical Analysis Simulation Output. Proceedings of the 1997 Winter Simulation Conference, 1997.

Sanchez SM (2001) ABC's of Output Analysis. Proceedings of the 2001 Winter Simulation Conference, Arlington, USA, December 9-12, 2001.

Seila AF (1992) Advanced Output Analysis for Simulation. Proceedings of the 1992 Winter Simulation Conference, Arlington, USA, December 13-16, 1992.