



**FACTORS LEADING TO EFFECTIVENESS AND SATISFACTION IN CIVIL
ENGINEER INFORMATION SYSTEMS**

THESIS

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AFIT/GEM/ENV/08-M05

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**AN ANALYSIS OF THE EFFICACY OF THE LCOM IN ESTIMATING
MAINTENANCE MANPOWER PRODUCTIVE CAPACITY**

THESIS

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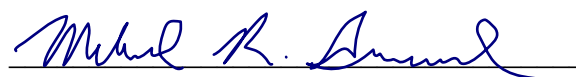
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Table of Contents	Page
Acknowledgments.....	v
Table of Contents.....	vi
List of Figures	ix
List of Tables	xi
I. INTRODUCTION	1
II. LITERATURE REVIEW.....	4
Information System Effectiveness.....	4
Satisfaction	7
Information Quality	9
System Quality	15
Service Quality	19
III. METHODOLOGY	23
Procedures	23
User Responses.....	24
Information Systems (Civil Engineer Systems)	26
Measures:.....	29
Information System Effectiveness.....	29
Satisfaction	29
Information Quality	30
System Quality	31
Service Quality	32
Qualitative Data.....	34

	Page
IV. ANALYSIS.....	35
Test of Hypothesis.....	36
Hypothesis Summary.....	39
Statistical Software Model Output	40
Additional Results	42
Systems Comparison: Information System Effectiveness.....	43
Systems Comparison: User Satisfaction.....	45
Systems Comparison: Information Quality	47
Systems Comparison: System Quality Box Plot	49
Systems Comparison: Service Quality	51
Management Priorities.....	53
V. DISCUSSION	57
Regression Model.....	57
Centralized or De-centralized.....	58
Costs	59
Software.....	60
Service Quality	60
BIBLIOGRAPHY	62
APPENDIX A: Comments (Users).....	68
APPENDIX B: Comments (Management and System Admin)	81
APPENDIX C: User Survey Questions	86
APPENDIX D: Manager Survey Questions	89
APPENDIX E: System Comparison, System Speed (User Reported)	91
APPENDIX F: User Software Preferences.....	95

	Page
APPENDIX H: GeoBase Comparison Across Major Commands.....	100
APPENDIX I: Participation by base.....	101
APPENDIX J: Website Development and Code	102
Web Site Code.....	103
Index Page (PHP)	103
Start Survey (PHP)	109
UserSurvey (PHP) User Selects a System.....	114
User Survey (PHP)	116
User Comments (PHP)	120
Manager Survey Select Systems (PHP)	129
Manager Survey.....	132
Manager Comments (PHP).....	139

List of Figures

	Page
Figure 1: Systems Comparison, IS Effectiveness Box Plot.....	43
Figure 2: Systems Comparison, User Satisfaction Box Plot.....	45
Figure 3: Systems Comparison, Information Quality Box Plot.....	47
Figure 4: Systems Comparison, System Quality Box Plot	49
Figure 5: Systems Comparison, Service Quality Box Plot	51
Figure 6: Depiction of Geographically Centralized System	54
Figure 7: Depiction of Fully Centralized System	55
Figure 8: Depiction of Distributed System	55
Figure 9: User Comment Category Frequencies (Self Select).....	68
Figure 10: Systems Response Time	91
Figure 11: Time to Navigate From Place to Place	91
Figure 12: Percent of Time Waiting For System While Using It	92
Figure 13: Hours a Month Using System	92
Figure 14: Users Want to Develop Their Own Solutions	93
Figure 15: Additional Formatting Required from Microsoft Applications	93
Figure 16: Other Units Should Integrate with Systems	94
Figure 17: User Software Preference (COTS/GOTS)	95
Figure 18: User Software Preference (OSS/COTS).....	95
Figure 19: User Preference (System Server Location)	95
Figure 20: Resource Optimization by System	96

	Page
Figure 21: Cost Savings by System	96
Figure 22: Timely Information by System.....	97
Figure 23: Time Savings by System	97
Figure 24: Additional Formatting Required by System.....	98
Figure 25: Want Users to Develop Their Own Solutions	98
Figure 26: Other Units Should Integrate w/ Systems	99
Figure 27: MAJCOM GeoBase Comparison.....	100

List of Tables

Table 1: User, Rank	24
Table 2: User, Time In Position.....	25
Table 3: User, Participation by Major Command.....	25
Table 4: User, Position Type	26
Table 5: System Evaluations by User	26
Table 6: User Questionnaire – Information System Effectiveness	29
Table 7: User Questionnaire - Satisfaction	30
Table 8: User Questionnaire - Information Quality	31
Table 9: User Questionnaire - System Quality	32
Table 10: User Questionnaire - Service Quality	33
Table 11: Regression Model 1, R value.....	40
Table 12: Regression Model 1, Coefficients.....	40
Table 13: Regression Model 2, R value.....	41
Table 14: Regression Model 2, Coefficients.....	41
Table 15: ANOVA Systems Comparison, IS Effectiveness	43
Table 16: ANOVA Systems Comparison, User Satisfaction.....	45
Table 17: ANOVA Systems Comparison, Information Quality	47
Table 18: ANOVA Systems Comparison, System Quality	49
Table 19: ANOVA Systems Comparison, Service Quality Box Plot.....	51
Table 20: Management Priorities.....	53

FACTORS LEADING TO EFFECTIVENESS AND SATISFACTION IN CIVIL ENGINEER INFORMATION SYSTEMS

I. INTRODUCTION

Organizations are increasingly implementing Information Systems (IS) (Zviran 2003), yet it is difficult to determine the benefits of Information Technology (IT) implementation (Grover, 1996). Information System effectiveness is related to increased user productivity, enhanced decision-making, organizational cost savings, improved customer satisfaction and other less tangible benefits (Gallager, 1974; Sharba, 1988). Therefore, researchers are attempting to capture the effectiveness or success of organizational information systems implementation (Ein-dor 1978; Seddon, 1999).

While there are many criteria available to evaluate information systems, the most sought after seems to be information system effectiveness (Sabherwal, 1994; Scott, 1994; Miller, 1987). According to Delone & Mclean (2003) and Seddon (1999), IS effectiveness is subject to the context of evaluation (i.e., “who does the system benefit?”). Some aspects of organizational benefit are more difficult to measure than others (Jurison, 1996). Davis (1989) developed a construct to measure perceived usefulness of information systems in the workplace at the worker level, which had strong reliability in empirical tests.

Researchers have commonly used user satisfaction as acceptable proxy for system effectiveness (Wang, 2007). Researchers have found that satisfaction can be an antecedent to individual impacts, which are a more objective measure of organizational information system effectiveness (Igbaria, 1997). While satisfaction may not necessarily

be indicative of organizational goals for information systems implementation, it is an accepted measure to capture the intangible benefits of information systems use (Delone & Mclean, 2003). Measuring both information system effectiveness in terms of job improvement from information system use, and also measuring user satisfaction from using the information system is necessary to evaluate tangible and intangible benefits of an information system (Delone & Mclean, 2003). User satisfaction is one of two measures used in this study to evaluate and compare various information systems.

Information system effectiveness at the user level, also known as “perceived usefulness,” has been measured by many researchers and has been found to be an important indicator to information system acceptance (i.e., use; Davis, 1989; Igbaria, 1990; Ives, 1983; Saarinen, 1996; Larcker, 1980). Delone & Mclean (2003) propose that individual impacts of information system effectiveness are a direct antecedent to organizational impacts. Therefore, measurement of information system effectiveness at the individual level serves as the pertinent outcome variable and is used to evaluate and compare information systems in this study.

Researchers have found measures of system quality and information quality have highly correlated impact on perceptions of satisfaction and information system effectiveness (Delone & Mclean, 1992; Delone & Mclean, 2003; Seddon, 1997; Rai et al., 2002). Additionally, researchers have proposed that service quality influences satisfaction and information system effectiveness in addition to system quality, and information quality (Pitt et al., 1995). System quality, information quality, and service

quality are measured as independent variables, which predict user satisfaction and information system effectiveness in this study.

This study uses information system effectiveness measures and predictors developed and used by information system researchers and applies them to users of multiple IT systems in a military organization. Effectiveness scores of these systems are compared, and then differences between systems are explored. Capturing the contributions of information system effectiveness provides a benchmark to organizations for information system improvements. Without this benchmark, managers may overvalue or undervalue information system assets (Grover, 1996).

II. LITERATURE REVIEW

Information System Effectiveness

The measurement of Information Systems (IS) effectiveness and its predictors has been a concern of practitioners and academics for the last few decades (Zviran, 2003). Quantifying the contributions of information system assets to organizational goals will aid decision makers in their investments (Grover, 1996). Since it is difficult to quantify the direct impact of information system assets to organizations, measures of system usage and user perceptions have been the focus of information system literature (Galleta, 1989).

The field of study for information system effectiveness is very broad, and researchers have developed many approaches to assess the advantages of information systems in organizations (Grover, 1996). Therefore, it is important for researches to assess what aspects of information system effectiveness they want to capture. Benefits of information system use can be highly dependent on the purpose of the system, the expanse to which the system is implemented, and the functions the system affects (Seddon, 1999).

Money et al (1979) developed a method to quantify the intangible benefits of information systems and conduct cost benefit analysis techniques. His objective was to use financial means to evaluate the benefits provided by information systems. The context of the study was organizational and required leveraging the information system to meet strategic organizational goals such as reduced inventory costs, reduced clerical support requirements, and transaction time savings (Money et al, 1979). This approach is similar to the concept of Business Process Reengineering, which encourages the

application of technology to streamline processes and reduce unnecessary work force requirements (Hammer and Champy, 1993).

While measuring broad organizational impacts of information systems is one way to assess the effectiveness of information systems, much of the research in information system effectiveness has focused on effectiveness at the individual level (Grover, 1996.) Impact of information systems at the individual level has cumulative impacts at the organizational level as well (Delone & Mclean 1992). Ives et al (1983) suggest that information system effectiveness is the degree to which organizational effectiveness is impacted by information system results. Davis (1989:320) defines perceived usefulness, also known as information system effectiveness (at the individual level), as “the degree to which a person believes that using a particular system enhances his or her job performance”

Seddon et al (1999) categorized the many information system effectiveness measures based on stakeholders and level of system interest and suggested measures for a “best match.” Seddon et al (1999) propose a 5x5 two-dimensional matrix of stakeholders versus system context. Stakeholders include independent observers, individuals, groups, owners, and country/society. System contexts include an aspect of IT design, an IT system, a type of IT application, all IT applications, an aspect of system development, and an IT function like an IT department. Consulting Seddon’s (1999) matrix for the context of this study (an information system/s), and the stakeholder of interest (the users of the system), the recommended measure of information system effectiveness is a measure of “perceived usefulness.” Perceived usefulness is a measure of job

performance improvement due to the use of an information system in the context of this study (e.g., this system improves my job performance).

Seddon et al (1999) specifically identify Davis' (1989) instrument of perceived usefulness as an appropriate measure for information system effectiveness for the context of an individual using a specific IT system. Rai et al (2002) used Davis' six item measure to validate and compare the information system success models of Delone and Mclean (1992) and Seddon (1997) on users of a university database system (n=274) and found support for both information system success models. From these models, it is important to note the predictors of information system effectiveness are system quality, information quality, use, and satisfaction.

Rai et al (2002) found information quality and system quality to be strong direct predictors of information system success as specified in the Seddon (1997) model. In contrast, Delone and Mclean's (1992) information system success model and Seddon's (1997) information system success model differ in the application of system "use" as an mediator between information system effectiveness and the constructs of "information quality" and "system quality," (Rai et al, 2002). Seddon (1997) argues that system use as depicted in the Delone and Mclean (1992) model could have three meanings, none of which would apply in a mandatory system use environment (Seddon, 1997). This concept of mandatory use is relevant in this thesis since the information systems being evaluated are all mandated for military and civil service employees in the Air Force. From the conceptual framework provided by Delone & Mclean (1992) and that of Seddon (1997), and the mandatory nature of use in the context of this study, it is

proposed that information quality and system quality are a direct precursor to information system effectiveness.

Satisfaction

Some organizations may not be concerned with user satisfaction when measuring the quality of their information systems, yet in the words of Ives et al (1983:786) “A ‘good’ information system perceived by its users as a "poor" system is a poor system.” Satisfaction is the result of a person taking the outcomes they have perceived and evaluating them on a pleasant-unpleasant continuum (Naylor et al, 1980). Delone and Mclean (1992:68) describe user satisfaction as “recipient response to the user of the output of and information system.” Research has shown that user dissatisfaction is the apparent cause of many system implementation failures prior to 1981 (Ginzberg 1981). Measurement of user satisfaction is not so important to researchers and practitioners in and of its self; rather, it is the high correlations with satisfaction that researchers are trying to tap (Ives et al, 1983).

In application to information systems, satisfaction was uniquely measured as the average score of multiple factors known as User Information Satisfaction (UIS: Bailey & Pearson, 1983; Ives et al, 1983). Bailey and Pearson’s (1983) 39 item instrument was factor analyzed into five aspects: staff and services, information product, vendor support, knowledge and involvement. Measurement of individual satisfaction towards an information system is calculated from a combination of the five factors (Bailey & Pearson, 1983). User Information Satisfaction (UIS) is defined by Ives et al., (1983:785) as: “the extent to which users believe the information system available to them meets

their information requirements. UIS provides a meaningful ‘surrogate’ for the critical but immeasurable result of an information system, namely, changes in organizational effectiveness.”

Seddon and Yip (1992) constructed a four-item instrument to measure user satisfaction directly. In addition, they measured factors from the Ives et al (1983) UIS short form instrument and found that information system factors such as information quality, usefulness, and user knowledge accounted for over 70% of the variance in the direct measure of user satisfaction (Seddon & Yip, 1992).

Galletta and Lederer (1989) used UIS measures of Ives et al (1983) and found that the use of multiple factors for a combined user satisfaction measure had significant differences in test retest scores, whereas, using summary questions such as “overall satisfaction” had significantly higher retest scores (Galletta & Lederer, 1989). Seddon and Kiew (1994) propose that the summary questions of user satisfaction from Galletta and Lederer (1989) are intended to measure user satisfaction; whereas, the UIS instruments developed by Pearson and Bailey (1983) and Ives et al. (1983) measure independent variables that are likely to cause satisfaction.

A transition from the multiple attribute user information satisfaction (UIS) measures to direct measures of user satisfaction began in the 1990’s and is well reflected in Delone and Mclean’s (1992) model for information system success. Today direct measurement of satisfaction as a proxy for system effectiveness is widely accepted among systems researchers (Wang, 2007). Rai et al (2002) point out that a single item

measure of user satisfaction can be used when only an overall evaluation of the information system is desired.

Researchers have built a strong argument for the importance of measuring information quality and system quality as antecedents to overall user satisfaction (Delone & Mclean, 1992; Seddon and Yip, 1992; Seddon & Kiew, 1994; Seddon, 1997; Rai et al, 2002).

Information Quality

Mclean and Delone (1992) define information quality as the “measures of the information system output.” Measures of information system output have to do with the quality of system output primarily in terms of information system reports (Delone & Mclean, 1992). Attempting to quantify the value of reports as a measure of information system value to an organization dates back to the mid 1960s (Gallagher, 1974). Early researchers found that it is difficult to measure benefits of information quality due to their inability to control other variables (Gallagher, 1974).

Gallagher (1974) identifies three methods to determine information quality used prior to the mid 1970s. One method implemented by Greenridge (1967) attempted to monitor the improvement of financial performance of an organization after implementation of a management information system. Impacts from the information system were difficult to measure in monetary terms due to many other variables that influence organizational profit (Gallagher, 1974). The second method was to measure the result from the insertion of specific logic into a information system (Gallagher, 1977).

This would be like programming a function to provide the best price for gas in town, and then equating the savings in gas to the value of information. The third method is to ask the decision maker to estimate the value of information provided by the system (Gallagher, 1977). This third method is much easier due to the amount of controls necessary for the previous two methods, but the accuracy of this third method is subject to the perception of individuals.

Gallagher (1977) preferred to use the third method in his research; with the intention to minimize the effects of individual bias with well-designed questionnaires. To assess the value of reports Gallagher asked managers how much they would be willing to pay for the report, and also to select semantic differential adjectives by which they could describe the report. Gallagher (1974) concluded that though there was little correlation between his two measures, there was potential for using these measures to analyze the quality of information provided by an information system. Munro & Davis (1977) later used Gallagher's instrument to measure decision maker's perception of value from reports generated by systems developed by different requirements.

Ahituv (1980) attempted to capture information quality through utility attributes as perceived by information system users. These utility attributes are information qualities developed on Multi-attribute Utility Theory and are expected to capture three different concepts of the value of information: the first being perceived value of information; the second, realistic value of information; the third, normative value of information (Ahituv, 1980). His proposed information quality attributes are timeliness, contents, and format. Timeliness is defined as the time between a user-initiated request

for information and the time of receipt (Ahituv, 1980). Contents are qualities of a report which may include aspects such as accuracy, relevance, and fineness. In other words, contents is the information delivered to a decision maker. Format has three aspects: Medium, visual display or printouts; Ordering, arrangement of data in a report; Graphic Design, report style, i.e. fonts, colors (Ahituv, 1980).

Larcker and Lessig (1980:123) developed six items divided into two categories: perceived usefulness and perceived “useableness”. Perceived usefulness is composed of three items: relevance, informative, and meaningful, to measure information quality. Perceived usability has to do with format of the information, i.e. is it unambiguous, clear, and readable (Larcker & Lessig, 1980). Larcker and Lessig (1980) reported that the reliabilities for their scales were low and not empirically derived, but felt their instrument should be useful for exploratory work.

Bailey and Pearson (1983) observed that information system analysts and academics were measuring user satisfaction with different variables. Bailey and Pearson (1983) reviewed 22 studies of user satisfaction and consolidated a comprehensive list of the factors used to measure satisfaction. They then consulted three data processing professionals for an assessment of the entirety of their list and added suggested items. With this list they interviewed 32 middle managers from eight organizations on the subject of computer systems. Concepts from the interviews were compared with the satisfaction factors list using critical incident analysis techniques (Bailey & Pearson, 1983).

The final product developed by Bailey and Pearson (1983) was a comprehensive list of factors that influence information system user satisfaction. Six of the top ten factors that influenced user satisfaction were information qualities as categorized by Delone & Mclean (1992). These six factors and their respective ranking are: Accuracy #2, Timeliness #3, Completeness #5, Relevancy #6, Precision #7, and Currency #10 (Bailey & Pearson, 1983).

- Accuracy is defined as the correctness of the system output.
- Timeliness is defined as the availability of the output information at a time suitable for its use.
- Completeness is defined as the comprehensiveness of the output information content.
- Relevancy is defined as the degree of congruence between what the user wants and what the information product provides.
- Precision is defined as the variability of the output information at a time suitable for its use.
- Currency is defined as the age of the output information.

Shortly thereafter, Ives et al (1983) refined and validated the instrument developed by Bailey and Pearson (1983) with four primary objectives. First they replicated the findings and reinforced the validity of the instrument. Then they reduced the overall length of the measure to 32 items and developed a standard short-form of the instrument using empirical methods (Ives et al, 1983).

Doll & Torkzadeh (1988) developed a 12-item instrument to specifically measure end-user satisfaction. They argued that previous measures were developed for environments where users of information systems may not directly use the information system or application since much of the computing of earlier generations was conducted on mainframes and centralized systems (Doll & Torkzadeh, 1988). Doll and Torkzadeh's (1988) 12-item measure focused specifically on users' direct perception of a computer application's information quality and system quality. Information quality items measured were: content, is output precise, meet your needs, sufficient information; Accuracy, is the system accurate; Format, is the format clear and useful; Timeliness, information is up-to-date, get the information you need in time (Doll & Torkzadeh, 1988).

Doll & Torkzadeh (1988) approach to measuring end-user perceptions is applicable to the context of this study in measuring direct interaction between users and applications. Seddon (1999) points out that information quality can take many forms with respect to information systems, and it is important to match information quality measures with the appropriate type of system (Seddon, 1999). Additionally, perspectives on quality of information can vary greatly between recipients of information and those who actually use information systems (Seddon, 1999).

From the research of Gallagher (1974; 1977), Ahituv (1980), and Larcker and Lessig (1980), Delone & Mclean (1992) it is proposed that the quality of information should have a positive impact on information system effectiveness at the individual and thus also at the organizational level. Furthermore, from the research of Bailey & Pearson (1983), Ives et al (1983), Doll and Torkzadeh (1988) it is also theorized that with

increased information quality there is a positive impact on user satisfaction. This leads to hypothesis one and two:

H1: Information Quality is positively related with information system effectiveness

H2: Information Quality is positively related with user satisfaction

Delone and Mclean (1992) develop the structure of their IS success model on the communication theory that demonstrates the serial nature of information as a form of communication. They make the case for separating aspects of system quality and information quality and their influence on IS success (Delone & Mclean, 1992):

“In their pioneering work on communications, Shannon and Weaver (1947) defined the technical level as the accuracy and efficiency of a system which produces information; the semantic level, as the success of the information in conveying the intended meaning; and the effectiveness level, as the effect of information on the receiver.” (Delone & Mclean, 1992) (p.61)

Information quality with respect to information systems lies in the semantic level of communication as outlined by Shannon & Weaver (1949) (Delone & Mclean, 1992). The work of Delone and Mclean 1992 provides groundwork for the delineation between information quality and system quality based on differences between technical and semantic levels of communication. (Delone & Mclean, 1992).

System Quality

Delone and Mclean (1992:64) define system quality as a “measure of the information processing system itself.” As mentioned in the Information Quality section of this paper, Delone and Mclean (1992) equated the flow of information in information systems to that of the pioneering work of Shannon and Weaver (1949), where those aspects of an information system that can be likened to the technical level of communication are considered aspects of system quality. There are many aspects of system quality the lie in the technical level of a system, researchers have tapped various aspects of these qualities. The following is a brief review.

Swanson (1974) studied appreciation of management information systems and found that the key to success is management’s awareness and appreciation of how the system works. In his study Swanson (1974) measured system qualities such as: the reliability of the system, if the interface terminals were troublesome or not (ease of use), if the average on-line response to inquiry was prompt or un-prompt (speed).

Seddon and Kiew (1994: 93) say, “system quality is concerned with whether or not there are ‘bugs’ in the system, the consistency of the user interface, ease of use, response rates in interactive systems, documentation, and sometimes quality and maintainability of the program code.”

Kriebel and Raviv (1980) applied conventional economic theory and empirical analysis to develop a model for optimization of information system performance. System qualities such as the capacity of the central processing unit and the amount of online disk space were directly measured for application of the optimization model. Essentially

Kriebel and Raviv (1980) were studying the information system specifically, and looking for ways the organization could optimize the use of limited hardware resources using queuing theory and economically prioritized batch processing (Kriebel & Raviv, 1980). Delone and Mclean (1992) point out that the system quality construct is a view of the information system from an engineering perspective where optimization of hardware and software reduces inefficiencies. Although Kriebel and Raviv (1980) sought to improve the use of hardware to improve the effectiveness of an information system, most modern practitioners and researchers seek to improve the hardware for use of the information system (Delone & Mclean 2003).

Etezadi and Farhoomad (1996) implemented five items to measure ease-of-use: ease of remembering functions and commands, ease of detecting possible errors, ease of correcting errors, ease of changing output information, and ease of recovery of lost data. They found that ease-of-use had a positive impact on user performance (Etezadi & Farhoomad, 1996). Goodhue and Thompson (1995) developed a model called Task Technology Fit (TTF) where they proposed information technology must be matched closely with the tasks of users for optimized user performance. Functionality, as proposed by Goodhue and Thompson (1995), is the capabilities built into the system made available to the user. The description of functionality by Goodhue and Thompson includes aspects of the system quality construct defined by Delone & Mclean (2003) which are information locate-ability, ease-of-use, and systems reliability. Delone and Mclean (2003) categorize a comprehensive list of system attributes as aspects of system quality: ease-of-use, functionality, reliability, flexibility, portability, and integration.

- Ease-of-use is defined by Davis (1989) as the degree to which a person believes that using the system is free of effort.
- Reliability is how dependable and consistent an information system performs providing access to the system and if it is available for use (Goodhue & Thompson, 1995). Some systems are designed to maximize availability advertising 99.99% uptime; whereas, other systems are unavailable during specific periods for maintenance and upgrades.
- Flexibility is a capability that allows decision makers to easily modify an information system to fit their ever-changing information needs (Wixom, 2001). Bailey and Pearson (1983: 543) similarly describe flexibility as “the capacity of the information system to change or be adjusted to new conditions, demands, or circumstances.” Flexibility was identified as the most important factor in Bailey and Pearson’s (1983) 39-item user information satisfaction instrument. Brancheau and Wetherbe (1996) observed that speed, flexibility, and responsiveness were the top issues driving technology infrastructure improvements to meet business requirements.
- Portability is the compatibility an information system has with other systems; systems are often more portable when developed on similar platforms (Wiell & Vitale, 1999).
- Integration is the ability for systems to communicate or transmit data automatically between other systems which service other functional areas

internal or external to the organization (Bailey & Pearson, 1983; Ives et al, 1983).

- Response time is defined by Palmer (2002) as a focus on speed for which the information system provides a reply to the user.

System quality has often been treated as a dependent variable by researchers seeking to improve system effectiveness through system quality. Baroudi (1986) says that researchers often focus on improving system quality for improved user satisfaction, which is assumed to be an indirect indication of improved decision-making performance as a result of system implementation. These assumptions are grounded in the theory of Participative Decision Making and Planned Organizational Change (Baroudi, 1986). Baroudi (1985) found in a survey of 200 production managers that user involvement in system development will enhance system use and user satisfaction. Ives and Olsen (1984) in their discussion of user involvement referenced Edstrom's (1977) research that suggests a reverse causality where poor system quality may lead to increased user involvement. Ravichandran and Rai (2000) investigated the factors that lead to system quality during information systems development utilizing surveys from fortune 1000 companies and federal and state government agencies. They concluded that system quality goals are best attained through top management promoting process improvement and encouragement of stakeholders (users) to push design of software development.

Many researchers have focused on system quality and its effect on IS effectiveness (Alloway, 1980; Bailey & Pearson, 1983; Ives et al., 1983; Seddon, 1997). Wixom and Watson (2001) found that system quality has the most direct influence on

information system effectiveness in terms of job improvement at the individual level. Delone and Mclean's (1992) model for information system success indicates that system quality is an antecedent to both user satisfaction and information system effectiveness. Flexibility and reliability were rate at #1 and #4 respectively as system quality priorities to users in Bailey & Pearson's (1983) 39-item instrument for user information satisfaction. From these research findings the following hypothesis are proposed.

H3: System Quality is positively related to information system effectiveness

H4: System Quality is positively related to user satisfaction

Service Quality

Service quality can simply be defined as the performance of the information system service provider (Pitt, 1995). Service quality was introduced as a modification to the Delone and Mclean (1992) model by Pitt (1995). Pitt (1995) argues that due to the modern utility of personal computers the need to turn data into meaningful information has become a service quality factor for the effectiveness of information systems. Personalized assistance can take multiple forms with regard to information systems (Pitt 1995). The five factors of the service quality construct are reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman, 1985). A description of each from Pitt (1997:212) is provided:

- Reliability: system service providers do their job right the first time and do what they said they will do (keep promises).
- Responsiveness: system service providers are prompt and willing to help
- Assurance: system service providers are courteous and competent

- Empathy: system service providers have genuine concern for customer
- Tangibles: system service providers' dress and equipment are professional in appearance

Measures of service quality come from research in services marketing and the most researched area of services marketing is service quality (Fisk, 1993). Parasuraman (1985) concluded that the matter of service quality is best described as the gap between user expectations of service quality and that which they receive. Zeithaml et al (1990) reports that user expectations are created by word of mouth conversations, personal needs, past experiences and communications with the service provider. In this research, the service provider is the “computer folks,” or system support department. Additionally, expectations are often increased by vendor advertisement of software capabilities. Impressions can be a critical factor since software vendors can have new capabilities but may not be fully compatible with existing systems (Pitt, 1995). This is an important expectation to manage since new IS implementations have failure rates of up to 75% (Laudon and Laudon, 1991; Pitt, 1995)

Parasuraman (1988) operationalized his results using the framework developed by Churchill 1978 whereby they found 10 overlapping aspects of service quality. An initial instrument of 97 items was developed and later refined by Parasuraman into a 45-item measure divided into five dimensions. These dimensions of service quality are identified in previous paragraph. After examining seven studies in service quality Fisk et al (1995) concludes that the instrument developed Parasuraman is a good predictor of service

quality and Parasuraman argues that the instrument is generalizable across industries where service is provided (Pitt, 1995).

Pitt (1995) modifies service quality measures for information systems and concludes that effectiveness of an IS can be partially evaluated by the quality of service provided. Yet the dimension of “Tangibles” has low reliability and may be less useful in the computing environment. He suggest that personnel appearance measures could be separated from equipment measures in when applying this construct to the IS context.

Pitt (1995) proposes that service quality is a predictor in information system effectiveness. Delone and Mclean added the service quality construct to their information system success model in 2003, but empirical support for the impact of the service quality construct on information system effectiveness in comparison to information quality and system quality constructs is yet to be fully realized (Van Dyke, 1995). Kettinger and Lee (1994) identify that some of Parasuraman’s (1985) service quality measures are similar to those of Bailey and Pearson’s (1983) UIS measures. From these proposed relationships of service quality to information system effectiveness and user satisfaction the following hypothesis are proposed.

H5: Service Quality is positively related with information system effectiveness

H6: Service Quality is positively related with user satisfaction

The service quality measurement instrument as developed by Parasuraman (1985) involves the measurement of expectations and perceptions where the gap between

expectations and perceptions is a function of $G = E - P$. Van Dyke (1997) strongly argues that the differential measurement of service quality has low validity and reliability and suggests direct measurement of perspectives as an alternative to the Parasuraman (1985) instrument. Teas (1993) found there are three different interpretations of expectations after administering Parasuraman's (1985) questionnaire. The three interpretations are categorized as: forecast, what the users think they will get in the future; importance, users confuse expectations with how important the item is; ideal point, some users who don't expect much occasionally have higher perceptions than expectations which leads to a negative gap calculation (Teas, 1993).

After a review of the literature Van Dyke (1997) concludes that implementing the differential service quality is problematic due to the many interpretations of the expectations construct. He points out that some findings show direct measurement of perceptions is a preferable method (Boulding, 1993). Parasuraman (1985) encourages the adaption of the original instrument to the context of study and Van Dyke (1997) points out that factor analysis is often miscalculated leading to higher Cronbach's Alpha consistently overestimating the reliability of difference scores. In fact, other researchers have found it necessary to remove the tangibles construct altogether (Van Dyke, 1997). From these arguments and for consistency of measurement with other constructs the service quality instrument is adapted for direct measurement of perceptions and some items are removed such as the tangibles construct and other less applicable items.

III. METHODOLOGY

Procedures

An e-mail request was sent to each active duty Unit Commander and a courtesy copy to his or her deputy and Operations Flight Commander for unit participation. The courtesy copy was added because it is not uncommon for a Unit Commander to be unavailable due to travel and deployments. When the Unit Commander is unavailable the Operations Flight Commander usually assumes the duties of the Squadron Commander.

Additionally, Civil Engineer Air Staff and Major Command A7 or A7C executive officers were contacted via telephone and follow-up e-mail to distribute the survey to their staff and to their respective Unit Commanders. Air Force Space Command, Pacific Air Force Command, United States Air Forces Europe, and Air Combat Command, Air Mobility Command, and Air Force Reserve Command were contacted via telephone with follow-up e-mail.

Approximately two weeks after initial requests were sent to Major Commands and Unit Commanders a follow-up request was sent with a tool enabling a view of unit participation in the study. A function was added to <http://www.misevaluation.org> to enable an individual to see how many people had participated by system from the same IP address. Using this new feature commanders were asked to consider requesting additional participation if specific systems had little participation. The reason this functionality was possible is due to the fact that most Air Force bases have a specific IP address where all computers accessing <http://www.misevaluation.org> appear to have the same IP address.

User Responses

The total number of users who fully participated in the survey was 858.

Participation is categorized by rank, major command, position, time in position, and user type. For “user type” 43.9 percent (n= 377) of respondents are system users who both enter data and run reports. 24.8 percent (n=213) of respondents are system users who only enter data. 24.4 percent (n=209) are system users who also manage other users. Finally, 6.9 percent (n=59) of respondents are system users who only run reports.

Distribution of respondents by Rank, Major Command, Position, and time in position can be seen in the following figures.

Table 1: User, Rank

	Frequency	Percent
"LN, 11+"	1	0.1
"LN, 8-10"	1	0.1
"GS, 1-4"	2	0.2
"WG, 11-13"	3	0.3
"WG, 14+"	4	0.5
"WG, 1-5"	4	0.5
"LN, 4-7"	9	1.0
"WG, 6-10"	16	1.9
Contractor	20	2.3
FGO	29	3.4
CGO	38	4.4
"GS, 13+"	71	8.3
Airman	72	8.4
Other	74	8.6
SNCO	78	9.1
"GS, 5-8"	84	9.8
NCO	172	20.0
"GS, 9-12"	180	21.0

Table 2: User, Time In Position

	Frequency	Percent
less than 2 months	18	2.1
2 to 5 months	45	5.2
5 to 8 months	68	7.9
8 to 12 months	67	7.8
12 to 18 months	80	9.3
18 to 24 months	81	9.4
2 - 3 years	134	15.6
3 - 4 years	82	9.6
5 - 6 years	60	7.0
6+ years	223	26.0

Table 3: User, Participation by Major Command

	Frequency	Percent
ACC	330	38.5
PACAF	107	12.5
USAFE	103	12.0
AMC	102	11.9
AFMC	66	7.7
AETC	51	5.9
AFSPC or AFSC	47	5.5
HQ AF	15	1.7
AETC - AFIT specific	10	1.2
AFDW	9	1.0
AFRC	7	0.8
AFCEE	6	0.7
AFSOC	2	0.2
CAP	2	0.2
AFCEA	1	0.1

Table 4: User, Position Type

	Frequency	Percent
User / Other	498	58.0
Super/Section Chief	192	22.4
MAJCOM A7 Staff	61	7.1
Flight CC	54	6.3
BCE or Deputy	13	1.5
Air Staff	11	1.3
AFCEA	10	1.2
AFCEE	9	1.0
Observer	7	0.8
MAJCOM A7 CC	3	0.3

Table 5: System Evaluations by User

	Frequency	Percent
ACES-PM	206	24.0
IWIMS	198	23.1
ACES-FD	162	18.9
AFTR	87	10.1
GeoBase	62	7.2
ACES-HM	50	5.8
ACES-PR	44	5.1
ACES-RP	37	4.3
ACES-HF	7	0.8
ACES-FM	5	0.6

Information Systems (Civil Engineer Systems)

This study evaluates factors that lead to information system effectiveness using ten IT systems developed to support Air Force Civil Engineers. Seven of these systems are government developed Automated Civil Engineer System (ACES) modules. The remaining three systems are distinctly different from the ACES modules. Provided below is a list of the seven ACES modules with brief description.

ACES-PM: Project Management database developed to support construction and maintenance project programming. ACES PM is available at each active duty and some

reserve and air national guard bases. ACES-PM is the only centralized database of the ten in this study, which means that all regional bases using this system access the same database. ACES-PM is supported by three regions. The first region, all CONUS bases use one database located at Gunther Annex, Montgomery, Louisiana. The second is located at Hickam AFB, Honolulu, Hawaii and supports all PACAF bases. The third is located at Ramstein AB, Germany and supports all USAFE bases.

ACES-PR: Personnel and Readiness module supports some Readiness Flight functions and Unit Deployment Manager functions. ACES-PR like most of the other ACES modules is located at Gunther Annex, Hickam AFB, or Ramstein AB. Additionally ACES-PR has a separate schema or database unlike ACES-PM where multiple units share the same database. Although ACES-PR has separate databases for each unit, all of these databases are likely hosted on the same server at one of the three locations.

ACES-FM: Is a financial management system designed to support the resources flight. ACES-FM architecture is the same as ACES-PR in that each unit has a separate schema hosted at one of three locations.

ACES-HM and ACES-HF support housing operations. HM is housing management, and HF is housing furnishings. Housing flight representatives use ACES-HM to support housing services, whereas HF is used to specifically track furniture inventory. Support for ACES-HM and ACES-HF is similar to ACES-PR and ACES-FM utilizing separate schemas hosted at one of three locations.

ACES-RP stands for Real Property and supports facility data accumulated through the construction, operation, maintenance, and demolition of facilities. ACES-RP is supported by separate schema at one of three locations just like ACES-PR, HM, HF, and FM.

ACES-FD supports emergency dispatch and data management functions for the Fire Department and is unique from other ACES modules. Unlike all other ACES modules a single database and server at each installation support ACES-FD. The reason for the decentralized server is to meet NFPA code, which specifies that automated systems supporting fire-fighting operations must have a user response time no greater than five seconds.

The other three systems which are not considered ACES modules are heavily used by all active duty Air Force Civil Engineers. The Air Force Training Record (AFTR) system was developed to support enlisted training requirements. This system is quite new and has taken over the functions of a previous database known as CoverTrain.

IWIMS is the interim work information management system used by the Civil Engineer Operations Flight. The functions served by this system date back to the late 1970s. IWIMS formerly known as work information management system WIMS is run on a UNIX COBAL environment that emulates the original Wang based WIMS. IWIMS automates much of the work order, inventory, manpower, and financial processes of the Operations Flight.

GeoBase is a geographical based information system most commonly supported by commercial off the shelf ESRI Geospatial software. GeoBase is not a standardized

application across the Air Force. Major commands individually fund GeoBase contractors to develop geospatial applications.

Measures:

Information System Effectiveness

Here six items from Rai et al (2001) originally developed by Davis (1989) are adapted to measure information system effectiveness on the job. Reliability for this instrument yields Cronbach's alpha $\alpha = 0.978$

Table 6: User Questionnaire – Information System Effectiveness

<i>Question#</i>	<i>Question</i>	<i>Type</i>	<i>Source</i>
6-1	Using SIS enables me to accomplish job-related tasks more quickly	9 Item Likert	Rai et al., 2002
6-2	Using SIS improves my job performance	9 Item Likert	Rai et al., 2002
6-3	Using SIS in my job increases my productivity	9 Item Likert	Rai et al., 2002
6-4	Using SIS enhances my effectiveness on the job	9 Item Likert	Rai et al., 2002
6-5	Using SIS makes it easier to do by job	9 Item Likert	Rai et al., 2002
6-6	I find SIS useful on my job	9 Item Likert	Rai et al., 2002

Satisfaction

Bailey and Pearson (1983:531) define the measure of satisfaction: "satisfaction in a given situation is the sum of one's feelings or attitudes toward a variety of factors affecting that situation." Therefore many authors use this item to measure satisfaction to include but not limited to (Rai et al. 2002, Doll and Torkzadeh1988, Torkzadeh and Doll 1991, Hendrickson et al. 1994, Doll et al. 1994). Here a single measure for satisfaction on a 9-item Likert scale is used. Additionally, to provide insight as to the relative

satisfaction values; a single satisfaction item evaluates common systems (questions 5-2 through 5-7) among all participants in this study.

Table 7: User Questionnaire - Satisfaction

<i>Question#</i>	<i>Question</i>	<i>Type</i>	<i>Source</i>
5-1	What is your overall satisfaction with SIS?	9 Item Likert	Rai et al., 2002
5-2	What is your overall satisfaction with Air Force Portal?	9 Item Likert	Rai et al., 2002
5-3	What is your overall satisfaction with Leave Web?	9 Item Likert	Rai et al., 2002
5-4	What is your overall satisfaction with TDY Defense Travel System?	9 Item Likert	Rai et al., 2002
5-5	What is your overall satisfaction with MyPay?	9 Item Likert	Rai et al., 2002
5-6	What is your overall satisfaction with Virtual MPF?	9 Item Likert	Rai et al., 2002
5-7	What is your overall satisfaction with GeoBase?	9 Item Likert	Rai et al., 2002

Information Quality

Seven items were used to measure the information quality construct. These items were taken from Rai et al. (2002) who modified these measures from Doll and Torkzadeh (1988). For Rai et al. (2002) the composite reliability of the information quality construct was 0.88 using their version of items 1-1 through 1-7. Furthermore Rai et al. (2002) conducted confirmatory factor analysis, which yielded support for these seven items serving as a single representation of the information quality construct (Rai et al, 2002).

An additional item (item 1-8) was added to the survey and is listed here with the Information Quality construct to capture security concerns of the information systems for additional results. Information security is an information quality item identified by Bailey and Pearson (1992) and has been included in the information quality construct. Reliability for this instrument yields Cronbach's alpha $\alpha = 0.871$

Table 8: User Questionnaire - Information Quality

<i>Question#</i>	<i>Question</i>	<i>Type</i>	<i>Source</i>
1-1	SIS provides the precise information you need	9 Item Likert	Rai et al., 2002
1-2	SIS provides output that is exactly what you need	9 Item Likert	Rai et al., 2002
1-3	SIS provides sufficient information to enable you to do your tasks	9 Item Likert	Rai et al., 2002
1-4	SIS has errors in the program that you must work around	9 Item Likert	Rai et al., 2002
1-5	Are you satisfied with the accuracy of SIS?	9 Item Likert	Rai et al., 2002
1-6	Are the output options (print types, page sizes allowed for, etc.) sufficient for your use?	9 Item Likert	Rai et al., 2002
1-7	Is the information provided helpful regarding your questions or problems?	9 Item Likert	Rai et al., 2002
1-8	Information is protected from unauthorized modification	9 Item Likert	Bailey & Pearson, 1993

System Quality

Seven items are used to measure the system quality construct. Rai et al (2002) and Doll and Torkzadeh (1994) both measure user-friendly item 2-9 and ease-of-use item 2-10. Rai et al. (2002) only these two measures for system quality whereas Delone and Mclean (2003) specify additional aspects of system quality captured in Wixom (2001) items 2-1 through 2-5.

Wixom (2001) studied the factors creating a successful data warehouse implementation using system quality, information quality, and information system effectiveness. User Questionnaire items 2-1 through 2-4 capture system flexibility, integrate-ability, adaptability, and versatility.

One additional item, question 2-5, is used from Goodhue (1995) to measure reliability for system quality. Goodhue developed three items to measure system reliability but each question was redundant to increase the reliability of the measure. Therefore, in an attempt to shorten survey length the most concise of the three was added. Reliability for this instrument yields Cronbach's alpha $\alpha = 0.891$.

Finally, three items are included in this question set but not in the construct. These measure aspects of "speed" such as navigation speed, user question 2-6 (Palmer, 2002 & Przystupa, 1993); response time after a user initiated request, user question 2-7 (Wu, 2005); and finally a perception measurement developed to compare waiting time versus working time, user question 2-8.

Table 9: User Questionnaire - System Quality

Question#	Question	Type	Source
2-1	SIS can flexibly adjust to new demands or conditions	9 Item Likert	Wixom 2001
2-2	SIS effectively integrates data from systems servicing different functional areas	9 Item Likert	Wixom 2001
2-3	SIS is versatile in addressing data needs as they arise	9 Item Likert	Wixom 2001
2-4	SIS effectively integrates data from a variety of data sources within the organization	9 Item Likert	Wixom 2001
2-5	I can count on SIS to be up and available when I need it	9 Item Likert	Goodhue 1995
2-6	Response time: The elapsed time between a user-initiated request for SIS service and a reply from the SIS system (seconds)	Fill In	Wu 2005
2-7	Time Required to navigate from place to place within SIS (seconds)	Fill In	Palmer 2002
2-8	While using SIS, what percent of your time is spent waiting for SIS (0 - 100)	Fill In	Context Specific
2-9	SIS is user friendly	9 Item Likert	Rai et al., 2002
2-10	SIS is easy to use	9 Item Likert	Rai et al., 2002

Service Quality

Pitt et al (1995) modified measures developed by Parasuraman for validation in IS contexts. Although these measures are divided into three categories to measure the gap

between user expectations and user perceptions, only items from the user perceptions instrument are used in this study. To save time and reduce the burden of the Pitt et al (1995) instrument direct measurement quality is used as suggested by Van Dyke (1995). User Questionnaire items 3-1 through 3-9 capture four of the five dimensions of service quality as described by Parasuraman 1988. The dimension of Intangibles is excluded from this study as it showed little reliability in Pitt et al. (1995). Reliability for this instrument yields Cronbach's alpha $\alpha = 0.978$.

User Questionnaire items 3-1 through 3-3 measure the dimension of service quality reliability. Items 3-4 and 3-5 measure service quality responsiveness. Items 3-6 and 3-7 measure service quality assurance. Item 3-8 measures service quality empathy, and finally item 3-9 measures overall satisfaction with quality of service provided by systems administrators. To reduce the length of this survey some items were removed from the 22-items used by Pitt et al (1995). Measures with the greatest reliability within their constructs were utilized here.

Table 10: User Questionnaire - Service Quality

<i>Question#</i>	<i>Question</i>	<i>Type</i>	<i>Source</i>
3-1	When users have a problem, SIS administrators show a sincere interest in solving it	9 Item Likert	Pitt et al, 1995
3-2	SIS administrators are dependable	9 Item Likert	Pitt et al, 1995
3-3	SIS administrators provide their services at the times they promise to do so	9 Item Likert	Pitt et al, 1995
3-4	SIS administrators give prompt service to users	9 Item Likert	Pitt et al, 1995
3-5	SIS administrators are always willing to help users	9 Item Likert	Pitt et al, 1995
3-6	The behavior of SIS administrators instills confidence in users	9 Item Likert	Pitt et al, 1995
3-7	SIS administrators are consistently courteous with users	9 Item Likert	Pitt et al, 1995
3-8	SIS administrators have the users' best interests at heart	9 Item Likert	Pitt et al, 1995
3-9	What is your satisfaction with the quality of service provided by SIS administrators?	9 Item Likert	Pitt et al, 1995

Qualitative Data

Users were offered an opportunity to provide comments in this study. First they had to take a quiz to measure their understanding of information systems. They were then instructed to provide a brief comment if they perceived it would be an improvement to the information system. Before the user could submit their comment they were forced to categorize their comment and estimate the return on investment they might expect in terms of man-hours.

Once comments were submitted, the user was encouraged to review responses from others who had already taken the survey for their respective information system. Users could select from a nine item Likert scale their level of agreement with each comment left by others. They could also estimate return on investment in terms of man-hours an idea would save them, and finally they could indicate if the comment was similar and preferable to their own. Users could review as many comments as available.

Comments available for review appear in order of greatest quiz score to least quiz score and then by quiz time. The reason for this method is the assumption that personnel who score better on the information systems quiz will have greater insight to how their respective information system could be improved. Scored user and manager comments are available in Appendices A and B.

IV. ANALYSIS

Preface

The focus of this study is to determine the effects of service quality on information system effectiveness and satisfaction. An acceptable method to determine the impact of service quality on information system effectiveness and satisfaction is to use linear regression. Regression analysis is useful in predicting how much a variable may be affected by one or more influencing variables (Field, 2005). Multiple regression analysis is necessary to test the hypothesis that service quality influences information system effectiveness and satisfaction while controlling for system quality, information quality, and the respective systems.

Descriptive Information

Descriptive and correlation analysis of the independent and dependent variables resulted in evidence that system quality, information quality, and service quality are correlated to information system effectiveness and user satisfaction. System quality is positively related to information system effectiveness and satisfaction ($r = .701$ and $.844$, $p < .001$, respectively). Information quality is positively related to information system effectiveness and satisfaction ($r = .711$, and $.790$, $p < .001$, respectively). Service quality is positively related to information system effectiveness and satisfaction ($r = .475$, and $.537$, $p < .001$, respectively). Independent variable correlations were high between system quality and information quality at ($r = .805$, $p < .001$). Correlations from service quality to information quality and system quality are ($r = .501$, $r = .533$, $p < .001$, respectively). The high correlations between system quality and information quality are

expected since research has indicated a consistent relationship. High correlations from service quality to the information quality and system quality are expected since service quality can enhance aspects of both system quality and information quality.

Test of Hypothesis

As part of the regression analysis procedure it is important to determine if the data is coded properly. Histograms were created for each of the independent variables to see that they are approximately normal with mean of zero. The information quality and system quality constructs were approximately normal.

The basic assumptions for linear regression require non-zero variance, no perfect multicollinearity, homoscedacity, independent errors, normally distributed errors, independence and linearity (Field, 2005). All of the assumptions to use multiple linear regressions are met for this study except concerns about the normal distribution of the service quality responses. The P-P plot of standardized residuals for dependent variables of information effectiveness and satisfaction indicate that the homogeneity of variance is not violated. Additionally, this plot of the residuals by the predicted values indicates that the assumptions of linearity and homoscedacity are met. The Durbin-Watson test indicates independence since adjacent residuals are not correlated with a score of 2.045 for the information system effectiveness model and 1.912 for the user satisfaction model. The colinearity diagnostics confirmed the assumption of independent errors is valid with all variance inflation factors (VIF) less than 3.03. Therefore, multicollinearity assumptions are met.

SPSS (version 15) statistical software application was used to perform regression analysis for this study. Hypothesis 1 stated that information quality would have a positive relationship with information system effectiveness. To test this hypothesis one multiple regression (model 1) was computed using information quality, system quality, and service quality constructs as influencing variables. Additionally the study controlled for each information system using dummy values of 1 to represent each system. ACES-PM was selected as a control since it has the highest response rate and therefore was the one system that is not dummy coded.

Results for the overall regression analysis results for model 1 produced $R^2 = .59$ and adjusted $R^2 = .58$ which accounts for total variance in information system effectiveness due to the independent variables of information quality, system quality and service quality. For model 1 information quality ($\beta = .368, p < .001$) is significantly related to information system effectiveness. The results support the positive relationship between information system quality and information system effectiveness; and therefore support Hypothesis 1.

Hypothesis 2 was evaluated in model 2 with a single multiple regression similar to model 1 except that the dependent variable is user satisfaction instead of information system effectiveness. Model 2 produced $R^2 = .76$ and adjusted $R^2 = .76$ which accounts for total variance due to the independent variables of information quality, system quality and service quality. For model 2 information quality ($\beta = .28, p < .001$) is significantly related to user satisfaction. The greater influence of information quality on information system effectiveness may have to do with the fact that it is the information that helps get

the job done or decision made. The results support the positive relationship between information quality and user satisfaction and therefore support hypothesis 2.

Hypothesis 3 is evaluated in model 1 similarly to hypothesis 1. System quality is positively related to information system effectiveness ($\beta = .32, p < .001$) which supports hypothesis 3. The beta of information quality is slightly higher than that of system quality in affecting information system effectiveness. This may also be due to the fact that the information provided from the system has a direct impact to decision making.

Hypothesis 4 is evaluated in model 2 similarly to hypothesis 2. System quality is positively related to user satisfaction ($\beta = .58, p < .001$) which supports hypothesis 4. The beta for system quality is significantly higher in its influence on user satisfaction than information quality ($\beta = .28$). This may be due to the mandatory nature of using the system. The information quality has an impact on getting the job done, but the system quality has a big effect on the perceptions of the user. The system may get information to the decision maker quickly or slowly but that information has the same effect on getting the job done, yet waiting for the system could make a user disgruntled and his satisfaction could drop.

Hypothesis 5 is evaluated in model 1 similarly to Hypothesis 1 and 3. Service quality is positively related to information system effectiveness ($\beta = .10, p < .001$), which supports hypothesis 5. Understanding how service quality affects information system effectiveness in comparison to information quality and system quality provides new insight to information systems research. Although service quality has a smaller beta than information quality and system quality in model 1 there is support that improvements in

service quality will improve information system effectiveness. In some ways service quality could be considered a low hanging fruit or economical fix to improve information systems effectiveness that could go overlooked.

Hypothesis 6 is evaluated in model 2 similarly to Hypotheses 2 and 4. Service quality is positively related to user satisfaction ($\beta = .08, p < .001$), which supports hypothesis 6. Comparing service quality betas in models 1 and 2 we see that service quality has a slightly greater beta in information system effectiveness than user satisfaction.

Hypothesis Summary

H1: Information Quality is positively related with information system effectiveness (supported)

H2: Information Quality is positively related with user satisfaction (supported)

H3: System Quality is positively related to information system effectiveness (supported)

H4: System Quality is positively related to user satisfaction (supported)

H5: Service Quality is positively related with information system effectiveness (supported)

H6: Service Quality is positively related with user satisfaction (supported)

Statistical Software Model Output

Table 11: Regression Model 1, R value

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					Sig. F Change	R Square Change	F Change	df1	df2	
1	.767(a)	0.588	0.581	0.37855	0.588	89.116	12	750	0.001	2.045
a. Predictors: (Constant), IWIMS, ACES_FM, ACES_HF, AVG_sysqual, ACES_RP, ACES_PR, ACES_HM, AFTR, GeoBase, AVG_servqual, ACES_FD, AVG_infoqual										
b. Dependent Variable: IS Effectiveness										

Table 12: Regression Model 1, Coefficients

Coefficients(a)									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Part	Tolerance	VIF
1	(Constant)	0.006	0.033		0.181	0.856			
	AVG_infoqual	0.532	0.059	0.368	9.042	0.001	0.711	0.314	0.212
	AVG_sysqual	0.393	0.052	0.318	7.588	0.001	0.701	0.267	0.178
	AVG_servqual	0.117	0.035	0.095	3.346	0.001	0.475	0.121	0.078
	ACES_PR	0.018	0.066	0.007	0.278	0.781	-0.028	0.010	0.007
	ACES_RP	0.206	0.071	0.073	2.893	0.004	0.094	0.105	0.068
	ACES_HM	0.014	0.068	0.005	0.211	0.833	0.051	0.008	0.005
	ACES_HF	-0.054	0.172	-0.007	-0.314	0.754	-0.048	-0.011	-0.007
	ACES_FM	-0.306	0.192	-0.038	-1.594	0.111	-0.053	-0.058	-0.037
	ACES_FD	-0.069	0.042	-0.047	-1.637	0.102	-0.124	-0.060	-0.038
	AFTR	-0.166	0.051	-0.087	-3.244	0.001	-0.188	-0.118	-0.076
	GeoBase	0.161	0.059	0.073	2.717	0.007	0.215	0.099	0.064
	IWIMS	0.098	0.041	0.071	2.407	0.016	0.159	0.088	0.056
a. Dependent Variable: IS_Effectiveness									

Table 13: Regression Model 2, R value

Model Summary(b)										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					Sig. F Change	R Square Change	F Change	df1	df2	
2	.871(a)	0.759	0.755	0.28806	0.759	201.02	12	767	0.001	1.912
a. Predictors: (Constant), IWIMS, ACES_FM, ACES_HF, AVG_sysqual, ACES_RP, ACES_PR, ACES_HM, AFTR, GeoBase, AVG_servqual, ACES_FD, AVG_infoqual										
b. Dependent Variable: SIS_Satisfaction										

Table 14: Regression Model 2, Coefficients

Coefficients(a)									
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Part	Tolerance	VIF
2	(Constant)	0.001	0.025		0.048	0.962			
	AVG_infoqual	0.398	0.044	0.278	9.006	0.001	0.790	0.309	0.160
	AVG_sysqual	0.715	0.039	0.579	18.259	0.001	0.844	0.550	0.324
	AVG_servqual	0.097	0.027	0.079	3.671	0.001	0.537	0.131	0.065
	ACES_PR	-0.065	0.050	-0.025	-1.282	0.200	-0.051	-0.046	-0.023
	ACES_RP	-0.055	0.054	-0.019	-1.022	0.307	0.019	-0.037	-0.018
	ACES_HM	-0.008	0.050	-0.003	-0.169	0.866	0.050	-0.006	-0.003
	ACES_HF	-0.086	0.120	-0.013	-0.718	0.473	-0.058	-0.026	-0.013
	ACES_FM	-0.200	0.131	-0.027	-1.523	0.128	-0.028	-0.055	-0.027
	ACES_FD	-0.057	0.032	-0.039	-1.787	0.074	-0.074	-0.064	-0.032
	AFTR	-0.079	0.038	-0.042	-2.052	0.040	-0.130	-0.074	-0.036
	GeoBase	-0.088	0.045	-0.040	-1.960	0.050	0.149	-0.071	-0.035
	IWIMS	0.038	0.031	0.028	1.242	0.214	0.146	0.045	0.022
a. Dependent Variable: User Satisfaction									

Additional Results

Since the data supports the six hypothesized positive relationships of the independent variables to the dependent variables it is worthwhile to investigate differences between systems. Figure 1 depicts a box plot of the information system effectiveness scores for each of the systems evaluated. The Box plot depicts the mean scores for each of the systems and the quartile distribution of scores. To interpret the box plot consider that the distance between the upside down T and the bottom of the box plot shows the range of the lowest 25% of scores for that system. Likewise the distance from the bottom of the box to the middle is where the next 25% of scores fell and so on. The greater the distance between sections indicates greater variance.

Significant variance can occur for many reasons. It may mean that the range of perceptions regarding that variable is high, or it could indicate that there are other variables that should be considered. For example do the GeoBase means vary by Major Command? Another reason for a wide variance may be due to few responses for that system. Consider ACES-HF, and ACES-HM has only 7 and 5 responses respectively.

To verify that the means between systems are statistically significant an ANOVA test was used to compare means between systems and determine if they are significant based on the mean, variance, and number of responses. In the Figures below labeled “ANOVA Systems Comparison” it is evident if two systems have significantly different results where the p value is less than 0.05. Values in these tables are the difference between system means. To determine which system has the greater mean take a look at the box plot.

Systems Comparison: Information System Effectiveness

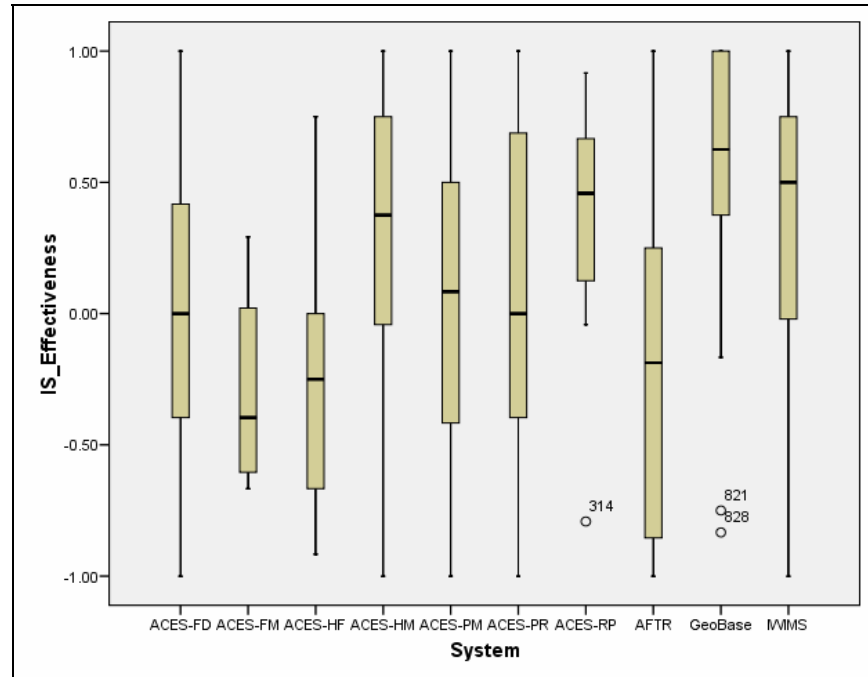


Figure 1: Systems Comparison, IS Effectiveness Box Plot

Table 15: ANOVA Systems Comparison, IS Effectiveness

Information System Effectiveness (Job Enhancement)										
	Aces-PM	Aces-PR	Aces-HM	Aces-HF	Aces-FM	Aces-RP	Aces-FD	IWIMS	AFTR	GeoBase
Aces-PM		----	----	----	----	0.36*	----	0.29***	----	0.56***
Aces-PR	----		----	----	----	----	----	----	----	0.45**
Aces-HM	----	----		----	----	----	----	----	-0.4**	0.38*
Aces-HF	----	----	----		----	----	----	----	----	----
Aces-FM	----	----	----	----		----	----	----	----	----
Aces-RP	-0.36*	----	----	----	----		-0.41**	----	-0.59***	----
Aces-FD	----	----	----	----	----	0.41**		0.34***	----	0.6***
IWIMS	-0.29***	----	----	----	----	----	-0.34***		-0.51***	0.26*
AFTR	----	----	0.4**	----	----	0.59***	----	0.51***		0.78***
GeoBase	-0.56***	-0.45**	-0.38*	----	----	----	-0.6***	-0.26*	-0.78***	
* p < .05; ** p < .05; *** p < .001										

It is apparent that GeoBase has a significantly higher mean than AFTR, ACES-FD, ACES-PM, ACES-RP, ACES-HM, and IWIMS. One reason that GeoBase may not have statistically significant means above ACES-HF, ACES-FM, and ACES-RP could be due to the low response rates for these systems. It is difficult to say why GeoBase performs significantly better than the other systems when only looking at the dependent variable information system effectiveness. Thanks to the positive results of the regression models 1 and 2 we know that the answer may lie in the independent variables of system quality, information quality, and service quality.

Systems Comparison: User Satisfaction

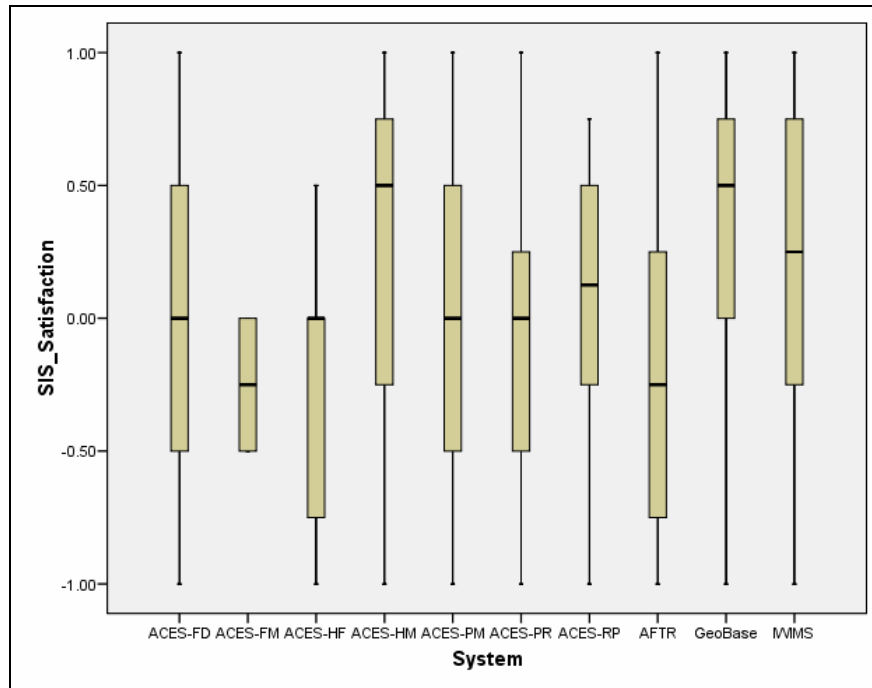


Figure 2: Systems Comparison, User Satisfaction Box Plot

Table 16: ANOVA Systems Comparison, User Satisfaction

User Satisfaction										
	Aces-PM	Aces-PR	Aces-HM	Aces-HF	Aces-FM	Aces-RP	Aces_FD	IWIMS	AFTR	GeoBase
Aces-PM		----	----	----	----	----	----	0.23**	----	0.39***
Aces-PR	----		----	----	----	----	----	----	----	0.39*
Aces-HM	----	----		----	----	----	----	----	-0.32*	----
Aces-HF	----	----	----		----	----	----	----	----	----
Aces-FM	----	----	----	----		----	----	----	----	----
Aces-RP	----	----	----	----	----		----	----	----	----
Aces-FD	----	----	----	----	----	----		0.25**	----	0.4***
IWIMS	-0.23**	----	----	----	----	----	-0.25**		0.37***	----
AFTR	----	----	0.32*	----	----	----	----	0.37***		0.53***
GeoBase	0.39***	-0.39*	----	----	----	----	-0.4***	----	0.53***	

* p < .05; ** p < .05; *** p < .001

User Satisfaction between systems is similar to that of the information system effectiveness construct where GeoBase has significantly greater means than other systems. Here GeoBase is significantly more satisfying to users than AFTR, ACES-FD, ACES-PM, and ACES-PR. There seems to be high correlation between User Satisfaction and Information System effectiveness. Note how the significant difference between GeoBase and IWIMS on information system effectiveness is $p < .05$ and the systems that had greater significance $p < .01$ or greater also had significant differences in their satisfaction means.

Although it is valuable to compare means between systems to determine which one might be better, it is difficult to know why without looking at some of the differences in their information quality, system quality, and service quality.

Systems Comparison: Information Quality

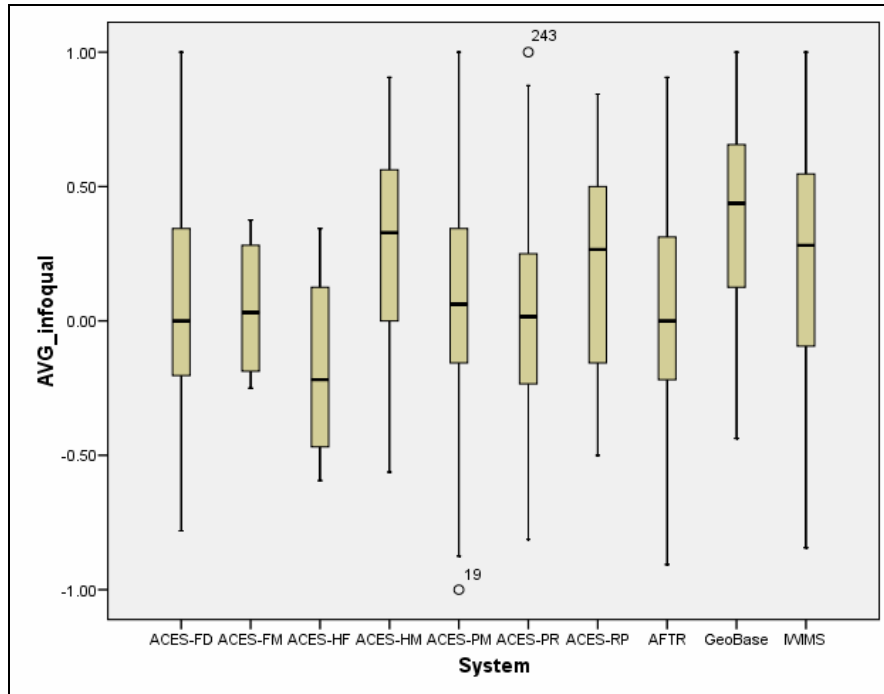


Figure 3: Systems Comparison, Information Quality Box Plot

Table 17: ANOVA Systems Comparison, Information Quality

Information Quality										
	Aces-PM	Aces-PR	Aces-HM	Aces-HF	Aces-FM	Aces-RP	Aces_FD	IWIMS	AFTR	GeoBase
Aces-PM		----	----	----	----	----	----	0.14*	----	0.3***
Aces-PR	----		----	----	----	----	----	----	----	0.3**
Aces-HM	----	----		----	----	----	-0.22*	----	-0.24*	----
Aces-HF	----	----	----		----	----	----	----	----	0.56*
Aces-FM	----	----	----	----		----	----	----	----	----
Aces-RP	----	----	----	----	----		----	----	----	----
Aces-FD	----	----	0.22*	----	----	----		0.19***	----	0.35***
IWIMS	-0.14*	----	----	----	----	----	-0.19***		-0.21**	----
AFTR	----	----	0.24*	----	----	----	----	0.21**		0.37***
GeoBase	-0.3***	-0.3**	----	-0.56*	----	----	-0.35***	----	-0.37***	
* p < .05; ** p < .05; *** p < .001										

Information quality between systems is significantly greater for GeoBase than for ACES-HF, AFTR, ACES-FD, ACES-PR, and ACES-PM. Additionally IWIMS information quality is significantly greater than ACES-FD, ACES-PM, and AFTR. From this list ACES-FD appears to have the worst information quality with a significantly lower mean than ACES-HM.

Qualitative data from this study show that 18 participants categorized their comments concerning information quality. One of these comments pertained to information accuracy, eight pertained to information completeness, four pertained to information ease of understanding, three pertained to personalization and one pertained to relevance and one to security. Looking at the ranked comments (the comments that are evaluated by others), it can be seen whether users agree with a particular comment. See Appendix A, comment ID 573, 422, 467, 201, 468, 386, 186, 572, and 378 all associated with information quality, some of which are highly agreed with by numerous reviewers. For example comment ID 201 pertains to personalization of information quality. The comment is as follows: “I find it hard to correct poorly input information for updating and to remove topics that are no longer relative to our job requirements.” Eight personnel reviewed this comment, which was created by a Senior Non-Commissioned Officer, where reviewers highly agreed averaging of 1.5 on a scale from 1 to 9, with one being positive agreement. Standard deviation of agreement between reviewers for comment ID 201 is 0.86 indicating little variance on the comment.

Systems Comparison: System Quality Box Plot

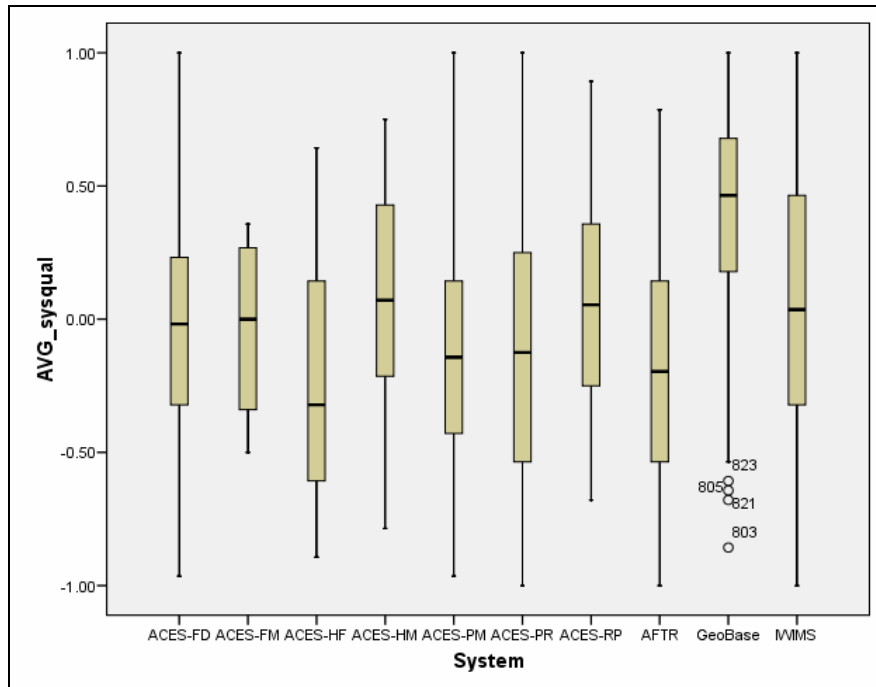


Figure 4: Systems Comparison, System Quality Box Plot

Table 18: ANOVA Systems Comparison, System Quality

System Quality										
	Aces-PM	Aces-PR	Aces-HM	Aces-HF	Aces-FM	Aces-RP	Aces_FD	IWIMS	AFTR	GeoBase
Aces-PM		----	----	----	----	----	----	0.17*	----	0.46***
Aces-PR	----		----	----	----	----	----	----	----	0.41***
Aces-HM	----	----		----	----	----	----	----	----	0.3*
Aces-HF	----	----	----		----	----	----	----	----	----
Aces-FM	----	----	----	----		----	----	----	----	----
Aces-RP	----	----	----	----	----		----	----	----	0.31*
Aces-FD	----	----	----	----	----	----		----	----	0.38***
IWIMS	-0.17*	----	----	----	----	----	----		-0.21*	0.3***
AFTR	----	----	----	----	----	----	----	0.21*		0.51***
GeoBase	-0.46***	-0.41***	-0.3*	----	----	-0.31*	-0.38***	-0.3***	-0.51***	
* p < .05; ** p < .05; *** p < .001										

System Quality for GeoBase is significantly higher than all systems except ACES-HF and ACES-FM, which simply had low response rates. IWIMS system quality is significantly higher than AFTR and ACES-PM. Since AFTR is lowest on the system qualities the qualitative data may support how improvements can be made to AFTR. Of 30 comments submitted by respondents evaluating AFTR 15 of these responses were self categorized as system quality comments. Many of the AFTR users complain about the slowness of the system. Comment ID 25 and 28 seem to capture the sentiment of a few evaluators that AFTR is a good system but that it is too slow. Users are having difficulty with the interface and more functionality is desired.

Systems Comparison: Service Quality

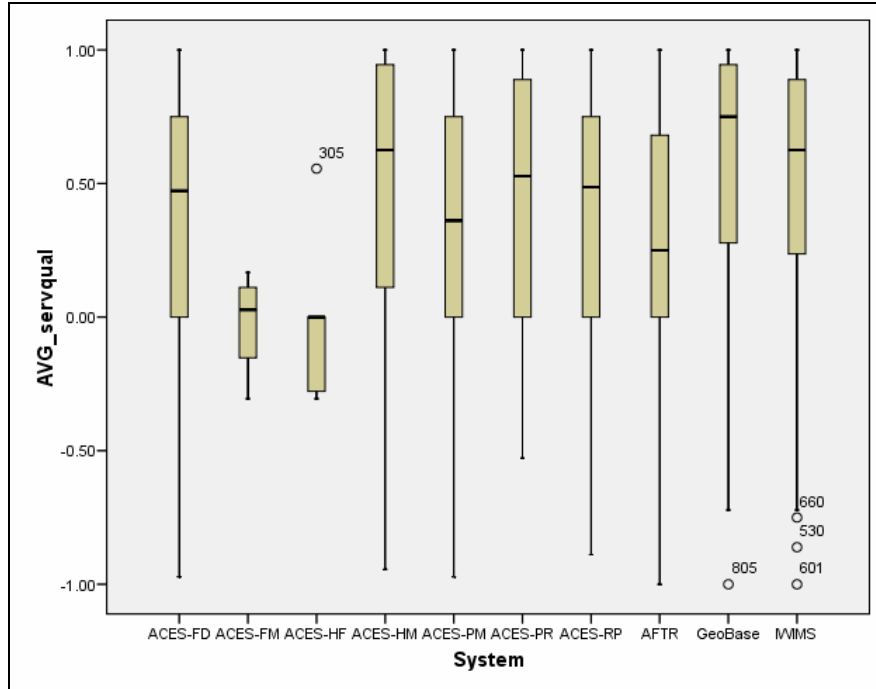


Figure 5: Systems Comparison, Service Quality Box Plot

Table 19: ANOVA Systems Comparison, Service Quality Box Plot

Service Quality										
	Aces-PM	Aces-PR	Aces-HM	Aces-HF	Aces-FM	Aces-RP	Aces_FD	IWIMS	AFTR	GeoBase
Aces-PM		----	----	----	----	----	----	0.17*	----	----
Aces-PR	----		----	----	----	----	----	----	----	----
Aces-HM	----	----		----	----	----	----	----	----	----
Aces-HF	----	----	----		----	----	----	----	----	----
Aces-FM	----	----	----	----		----	----	----	----	----
Aces-RP	----	----	----	----	----		----	----	----	----
Aces-FD	----	----	----	----	----	----		0.16*	----	----
IWIMS	-0.17*	----	----	----	----	----	-0.16*		0.24**	----
AFTR	----	----	----	----	----	----	----	0.24**		----
GeoBase	----	----	----	----	----	----	----	----	----	
* p < .05; ** p < .05; *** p < .001										

Although service quality was significant in both models 1 and 2, it influenced the dependent variables information system effectiveness and user satisfaction to a lesser extent than system quality and information quality. Yet investigating how to improve service quality may have dramatic effects on system quality and information quality. Only one comment of all users for all systems chose to address issues with service quality. One user comment (ID = 134, GS-13) reads “Our reliance on web based software demands it to work correctly. The IT people need to understand better both our need, and their effect on our work. I am the chief of programming, I live off ACES and I hate it. I use oracle downloads into to excel every chance I get.” 14 participants who reviewed this comment highly agreed with it (verified by a mean of 2.95 and standard deviation of 1.98).

Management Priorities

Table 20: Management Priorities

Rank Order Priorities			Count by Priority Selected							
Strategic Objective	Rank	Score	1	2	3	4	5	6	7	8
Reliability and Availability of CE Information Systems	1	989	57	32	27	16	11	5	4	0
User Satisfaction with CE Information Systems	2	850	26	33	24	25	19	15	9	3
Interoperability of Existing and Future Systems	3	788	23	28	24	22	19	15	14	5
Response Time of CE Information Systems	4	727	8	28	24	27	26	16	15	6
Business Process Improvement Through IT	5	726	30	15	18	13	26	18	20	10
Adaptability to Continuously Changing IT Capabilities	6	614	7	9	19	26	26	35	16	10
Cost of Information Systems	7	425	0	6	10	11	17	31	34	39
Centralized control of CE Information Systems	8	339	3	3	8	11	6	12	32	67
Totals			154	151	146	140	144	135	112	73
Score = [Priority 1 score]*8 + [Priority 2 score]*7 + ... [Priority 8 score]*1										

Table 20 depicts the priorities of system administrators and management level participants in this study. Descriptive statistics for participants in this portion of the study are: Position, BCE or Deputy = 56; Flight CC = 58; MAJCOM CC = 1; MAJCOM Staff = 22; Super/Section Chief = 45; User/Other = 53; Air Staff = 1; AFCESA = 3; AFCEE = 1. By Rank, GO = 1; FGO = 81; CGO = 11; Contractor = 9; GS-13+ = 40; GS 9-12 = 38; GS 5-8 = 4; WG 11 – 14 = 2; SNCO = 20; NCO = 10; Airman = 3.

Managers and system administrators where asked to prioritize the eight items listed in the table above. These eight items are ranked using a simple scoring method.

Items selected first receive eight points. If the item was selected, it receives a weight of 7 and so on until the eighth item, which receives a weight of 1.

Reliability and Availability of Information Systems was chosen as a first priority more than double any other option. When compared to the ranked comments in Appendix X, it is apparent that there are problems with system availability. At a time when the Civil Engineer is looking to transform business processes it is interesting to see business process improvement ranked at number five out of eight (AFCE 2007). Yet most comments are focused on aspects of system quality (such as speed of the system, and missing functionality). Some users call for integration of systems such as integrating ACES-PM with contracting and financial systems.

Figure 6, Figure 7, and Figure 8 help to visualize the differences between centralized, de-centralized, and distributed systems for the following discussion.

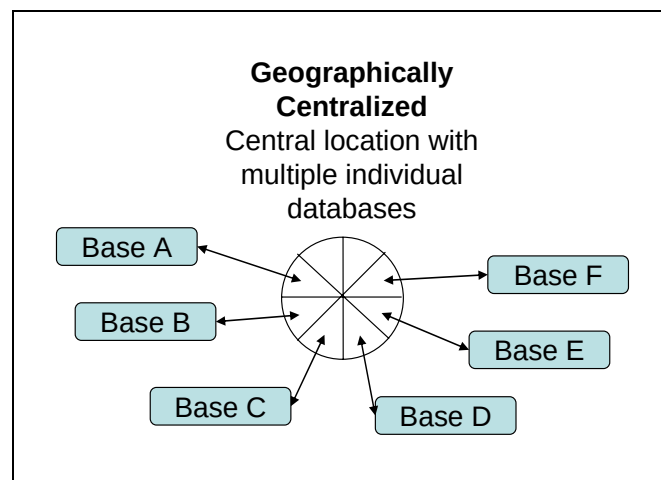


Figure 6: Depiction of Geographically Centralized System

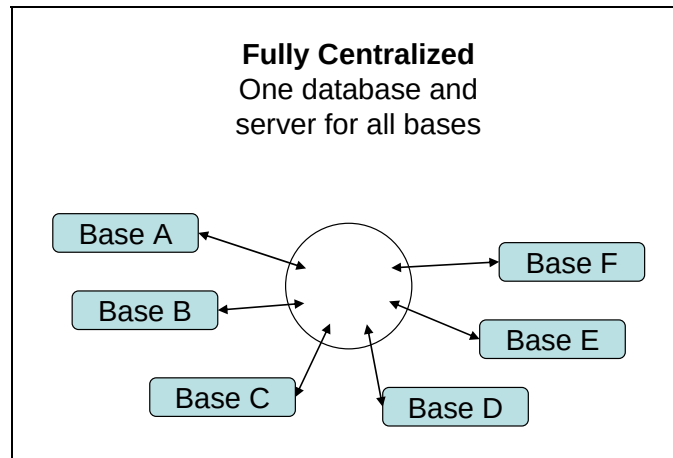


Figure 7: Depiction of Fully Centralized System

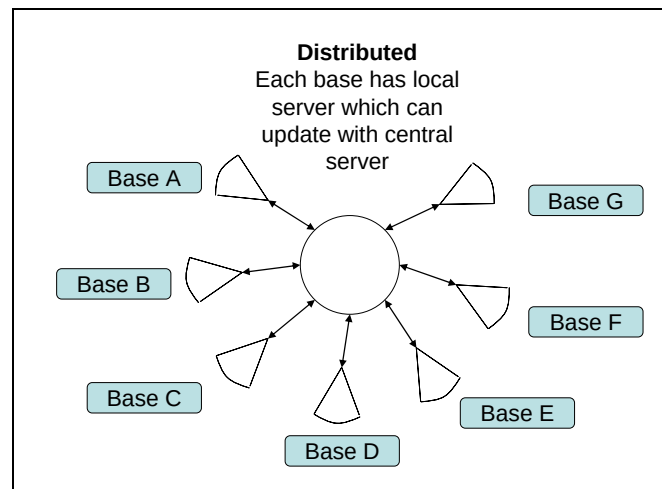


Figure 8: Depiction of Distributed System

Of note is the “centralization of Civil Engineer Systems” last on the list with a significantly lower score of 339. Some users claim that hosting the database locally would improve functionality, response time, adaptability, and integrate ability at the base level. This may not be a feasible option due to the price of licensing and maintenance for so many systems. Yet, some systems are already hosted at the base level such as the GeoBase server and ACES-FD server. These systems may be capable of supporting

decentralized or distributed systems for other systems such as ACES-PM and others. Having the system administered at the base level allows for much flexibility, yet uncontrolled modifications to systems could jeopardize the integrity of the system if inexperienced users are allowed to modify the database. The debate for base-level control is cause for high-level discussion of productivity vice reliability and standardization.

In support of localized development, GeoBase scored higher than all the other systems for all aspects of this study. Perhaps GeoBase could serve as a example for how to implement systems development. The service provider aspect of GeoBase is significantly different than other systems. GeoBase is the only system developed from the base level up to the MAJCOM level. All the other systems in this study are developed by AFCESA or similar agencies and then modified along the way. GeoBase has a server at the base level where contractors develop applications to meet user base organizational needs. Sometimes GeoBase is able to integrate with other ACES modules such as ACES-PM to add functionality to GeoBase applications. The fact that GeoBase is often located at the base level adds speed and capabilities for its users. Multiple comments from GeoBase users indicate that speed has worsened recently due to centralization of GeoBase functions on the Air Force Portal. Therefore the issue of centralized versus decentralized may be important to all Civil Engineer information systems.

ACES-PM users at Air Force Materiel Command finally decided to make their own improvements to ACES-PM and created their own solution called “EQWeb.” User

Comment for ACES-PM ID = 595 was a late comment in the survey but it still was highly agreed with at a mean of 3.5 and standard deviation of 1.65. The AFMC users feel that the new web based system “EQWeb” has much more functionality than ACES-PM. The commenter estimates that they save up to 500 manhours per base per month, and over 2000 hours per month at AFMC staff level. The system has been in service for over four years.

V. DISCUSSION

This study explored the relationship between information quality, system quality, and service quality measures and information system effectiveness and user satisfaction. The principal finding is that service quality does have a positive influence on information system effectiveness and user satisfaction when controlling for information quality and system quality factors. The importance of understanding the effectiveness of an organizational information system is vital to decision makers. By benchmarking the system’s effectiveness an organization can better evaluate the value of the information system. Without this benchmark organizations may overvalue or undervalue a system without good reason (Grover, 1996).

Regression Model

Evaluating service quality while controlling for information quality and system quality is a valuable contribution to the literature on information systems effectiveness.

Although the relationship is smaller for service quality than the other variables, it still has a significant impact on information system effectiveness and user satisfaction. Future research should be carefully designed to control for personal relationships between participants and system administrators. Much of the service quality construct was skewed to the right with very high scores in this study. It is difficult to say why these scores are highly positive. Intuitively it makes sense that participants think of their computer room personnel as their system administrators.

Using models 1 and 2 it is evident that a significant amount of information system effectiveness and user satisfaction is predicted by information quality, system quality, and service quality constructs. Knowing these values it was possible to compare system results with the statistical method of ANOVA. GeoBase appears to be most highly rated across all variables where a difference between systems is significant. Development methods of GeoBase in comparison to others systems may prove to be a worthwhile research interest to the Civil Engineer community.

Centralized or De-centralized

A significant discussion of centralized versus decentralized systems appears throughout the user comments. Determining the differences of centralized and decentralized systems would also be a valuable research endeavor. Data from this study could be further exploited to determine if there are significant differences in systems that are centralized and those that are not. A research effort in this area would require supplemental data to determine which bases have centralized systems and which do not. This may only be applicable for the GeoBase application since all other systems studied

here are centralized in the sense that they are hosted at a central location. It seems that when users refer to centralized they are talking about the system server being off base, whereas in other circles centralized means that all data for all bases is in the same database versus in different schemas on the same server.

Edstrom (1977) made the observation that when system quality is low enough it may cause users to get involved in trying to solve their problem. One user comment (ID = 595) may possibly be an example of Edstrom's (1977) observation. Future research should evaluate systems such as "EQweb" which replace the functionality of systems like ACES-PM. If the system is superior then it should be benchmarked much like the systems in this study. If the benchmarking shows that the system is superior then it should be replicated for use.

Costs

Although the cost of information systems was ranked well below others in Table 20 at number seven, the cost of information systems is often an important factor. Users and even managers rarely see the costs of information systems at the base level in the civil engineer community. In fact cost is one of the reasons for centralization of systems. By centralizing a system at one location for all Civil Engineers there are savings in licensing fees, technicians, and maintenance. The apparent losses due to centralization from looking at the user comments are flexibility, integrate-ability, response time, and personal customization. These losses may also result in costs that are more difficult to quantify. It is easy to quantify savings in licensing fees, technicians, and maintenance costs when scaling back an operation. It is more difficult to account for time wasted by

users waiting for systems to respond, trying to manipulate the data in other ways, and losses due to redundancy of effort when systems are not integrated at the base level.

Software

To help with the issue of costs, the civil engineer community may want to consider researching open source software solutions see (Figure 17, and Figure 18). An example of open source software is the Java J2EE, a client side scripting language. Other examples are PHP which is an open source server side scripting language used to create the website for this study. A couple of examples of free open source database engines are MySQL and PostgreSQL. Finally, one common open source software even to the government is the Apache web server developed by Sun Microsystems, Inc. MySQL is a powerful database used by Yahoo, Motorola, and Texas Instruments for its benefits to their enterprise (Fallon, 2004). Additionally, Sun Microsystems recently acquired MySQL in 2008 shortly after Oracle failed to acquire MySQL in 2007. For more information on policy implications concerning the use of open source software. Fallon (2004) provides promising information on precedent of the U.S. Government towards open source software.

Service Quality

It is evident from the comments that people are focused on the information quality and system quality constructs and not the information service providers. It is possible that they really don't consider who is responsible for their frustrations or what they should expect from agencies who provide the systems. It is possible that people blame

the system because there is not an accountable agent to whom they can turn to. For example many of the comments speak of change in terms of “we.” “We need to do this, or we need to do that.” By having a responsible process agent (Hammer and Champy, 1993) for each system, the service quality construct could have a significantly greater impact to information system effectiveness and user satisfaction.

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APPENDIX A: Comments (Users)



Figure 9: User Comment Category Frequencies (Self Select)

Comments, Users

System	Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
ACES-FD	1	2	0	NCO	3e771	Net Benefits	527
	make it user friendly						
	1	1	0	NCO	3E771	Use: Easy to Use	580
	"ACES-FD is a program as a station captain I must use daily at work. It is not user friendly, as I still have much to learn to even navigate to do anything besides routine daily items I am used to. More help would be beneficial to know what to do if something goes wrong. (Ex: Errors) Thanks!"						
	1	1	0	"GS, 9-12"	0081	Information Quality: Personalization	573
	"I would like to be able to select the data to print instead of printing data from preformatted reports. Example: Fire Extinguisher records - to view extinguishers due or past due scheduled maintenance I get all data for that record. All I need is bldg number, extinguisher number, serial number, due dates and location. "						
	1	5	0	"GS, 9-12"	3e7x1	Information Quality: Completeness	422
	ACES FD is just not user friendly.						
	1.29	17	0.82	SNCO	3E771	Use: Easy to Use	4
	I believe that it would work better if we were able to delete information that was input improperly.						
	1.33	3	0.47	"GS, 9-12"	3E7	ormation Quality: Ease of Understanding	467
	I need the ability to change course and certification titles and spelling errors.						
	1.5	8	0.86	SNCO	3e771	Information Quality: Personalization	201
	I find it hard to correct poorly input information for updating and to remove topics that are no longer relative to our job or requirements.						
	1.5	4	0.86	"GS, 9-12"	GS081	Net Benefits	414
	have standard lists for 1487 write ups and reference the actual verbiage of the NFPA codes and AFOSH of common repeat write ups to drop down menus for pick out ie illegal use of extension cord as permanant wiring not legal IAW AFOSH 91-501						

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
1.5	2	0.5	"GS, 5-8"	57170	Information Quality: Security	468

too redundant on ACES

1.7	10	0.9	NCO	3e771	Use: Easy to Use	118
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"On ACES FD when you are doing a NIFR report, I think it would be easier to have the most common incidents on top rather than searching through 100 incidents."

1.8	10	1.77	"GS, 5-8"	0081	Use: Easy to Use	245
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"It would be nice to have training on ACES-FD. There is never any training when programs come on line, it is learn as you go. If i new how to use the program up front it would be a productive item. "

1.81	11	1.26	NCO	3E751	System Quality: Reliability	148
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WHEN DOING THE SHIFT ROSTER AND I CHOOSE SOMEONE TO GO TO A TRUCK IF IT WOULD REMOVE THAT PERSON FROM THE DROP LIST. AND IF NOT REMOVED SAY THAT THIS PERSON WAS USED BEFORE

2	1	0	NCO	3E771	System Quality: Response Time	589
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Elimination of manual entry of information needs to take place. Time is watsed across all functions using ACES-FD to manually entry the information and adapt the information to the program. Current forms in use do not match the ones used by ACES-FD

2.07	13	1.07	"LN, 4-7"	081	System Quality: Adaptability	3
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ACES-FD needs to be more user friendly... need to be able to talk to other programs... cut and paste info from various programs...

2.16	18	1.74	SNCO	3E791	Use: Easy to Use	84
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Evaluate whether the money spent on continued ACES-FD development is the best use of limit resources; program has failed to deliver on promised improvements. Time has come to take another look at COTS fire data management software--other Branches of the service as well as local community fire departments are using COTS fire data management software with a high degree of user satisfaction.

2.25	4	1.29	"GS, 9-12"	3E771	Information Quality: Personalization	386
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"ACES-FD is a complicated system that does a porr job of generating data above that of basic shift rosters. For example, how do you determine training requirements for people who move from FACC to Operations or vice versa. It should be interactive enough to correctly calculate those changes. Lots of little issues that make it hard to use. "

2.33	12	1.49	"GS, 9-12"	3E7X1	System Quality: Adaptability	177
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Locally developed recordkeeping would be beneficial.

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
2.44	9	2.45	NCO	3E771	Use: Easy to Use	172

have the program be more like a windows interface

2.5	10	0.92	SNCO	3E771	Net Benefits	86
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Need more informational categories. Tracking of response times needs to be simplified. Currently you have to change screens with does not let teh time stamp work correctly.

2.57	7	1.98	"GS, 9-12"	3E771	Information Quality: Ease of Understanding	186
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"Hard to follow the flow on several of these software programs (ACES-FD, ACES-PR, DTS)"

2.71	7	2.18	"GS, 9-12"	57100	Net Benefits	265
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The ACES-FD team is generally more than willing to help with solutions. The real problem is funding of updates and solutions. I fully subscribe to the use of a data system that is flexible to our AF needs but we have to fund the fixes if we are going to develop in house. We spend countless hours inputting data that we cannot retrieve in useable information because our report generating process is financially and/or bureacratically stalled.

2.8	5	2.4	SNCO	3E771	Use: Easy to Use	332
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"Different types of false alarms, building types, reasons for alarms would all help to make things easier. There has to be a certain type that most bases encounter."

3.07	14	2.49	SNCO	3E771	System Quality: Adaptability	117
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Please switch to a user friendly commercial system. ACES-FD is cumbersome and should be replaced immediately. I have yet to encounter a fire department that uses the dispatch module as was intended due to poor design.

3.12	8	2.47	NCO	3E771	User Developed Solution	250
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Get rid of ACES-FD the program is the worst thing I have had to use. Microsoft has wonderful programs that can most likely do everything ACES does. NFIRS reports on ACES are ridiculous. Ther are other more user friendly NFIRS report programs on the market that are used by other fire services. The was no training provided to the end user when ACES was brought online.

4.57	7	3.24	NCO	3E771	Satisfaction	243
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ACES-FD SUCKS!

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
5	1	0	SNCO	3E771	Information Quality: Completeness	572

"Allow for other CE shops to use ACES/FD or integrate their particular program into ACES/FD. For example, this could be used by the utility shop and the fire alarm shop to input data that is critical for the fire department to review on reoccurring bases to ensure code compliance. Both of these flights inspect and maintain systems that are pertinent to the successful operation of the fire department. Currently, if I wanted information on a fire alarm system, sprinkler system, fixed suppression system (wet or dry chemical), hydrant water flow, etc., I would have to either go to that particular shop and look through their paper records or scan their excel data base to find the information that my office needs. Being overseas we can't readily identify, if most of the systems mentioned above have been inspected, tested, and maintained when we conduct our facility inspections. So this makes it difficult when it's time to answer NFPA 1201 questions because we receive little to no information on these types of systems from the shops and we have to dig deeply for answers. At least by combining the three shops this could provide a check and balance type system and also keep everyone honest between flights. Next allow for each base to delete or achieve records to replace existing bldgs, equipment, etc. Currently my base has 50 plus bldgs that we inputted incorrectly and when a delinquency report is ran the bldgs are being shown overdue despite the correct record being update. The help desk has not been able to help us correct this problem. Each base should have rights or privileges to modify their particular system. "

System ACES-HM

1	1	0	SNCO	9D000	Use: Dependence on the System	377
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ACES-HM for unaccompanied housing does not interface well with Furnishing Management Office. These database need to correlate with each other better to make it more user friendly.

1	1	0	NCO	9d000	Information Quality: Accuracy	378
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There are many things for on the housing side that need tp be update.

2	2	1	"GS, 5-8"	1173	System Quality: Reliability	161
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The system should not be internet based--if the internet is unavailable we are at a standstill. A program maintained at the location would be better.

2.25	4	1.63	"GS, 5-8"	1173	System Quality: Reliability	103
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"A data base system that has current, correct, updated data on individuals rank, duty phone, home phone, etc. input by one location and updated as changes occur would save everyone numerous man hours."

2.66	3	1.24	"GS, 5-8"	1173	System Quality: Reliability	151
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"An integrated system with current data that is up to date would help everyone who uses ACES. Each shop must check, recheck, data for up to dateness prior to doing any reports to insure accuracy. The time saved to many different shops would be of great help to all"

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
4	2	1	"GS, 5-8"	1173	Information Quality: Completeness	149

I believe CE should have a data base that all areas can input so the use can see the whole picture and access updated information.

8	1	0	NCO	9D000	System Quality: Response Time	461
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"Stop using governmental software and use commercially available software to save monsy and standardize. ACES, IWIMS, WIMS, etc cost BILLIONS and are often outdated once they are rolled out."

System ACES-PM

1	1	0	"GS, 13+"	32E3G	System Quality: Response Time	596
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"My only problem with ACES is the ""speed"" at base level. Delays waste my most valuable resource - time. If this can not be approved, then we need to find an application that is ""quicker""."

1	1	0	"GS, 9-12"	0809	System Quality: Adaptability	455
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"System is way to slow from screen to screen. to much time is wasted when the system ""locks up"" and you have to exit and re-enter. We have CAC cards, why do we still need user names and passwords? Running usefull reports is a nightmare, make report designing & running more user friendly.I only need very specific information for my job, why do I have to kill several trees to get a report when I only need a few items."

1	1	0	"GS, 9-12"	0802	Satisfaction	286
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ACESPM is to slow. I spend more time waiting than entering data.

1	1	0	NCO	3E271	Use: Easy to Use	285
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"If the system were more user friendly as opposed to ""Project"" friendly, it would be more efficient."

1.54	11	1.15	Other	YF-801-02	System Quality: Response Time	138
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"Make it more user friendly and more reliable, particularly in connection speed."

2.38	18	1.97	CGO	32E3G	System Quality: Adaptability	7
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ACES PM and IWIMS need to be integrated to share data. My impression of the current set-up relies on the ACES user to manually enter the WO# and any other pertinent data required. Reconciling a list of projects vs. work orders can be a nightmare if not properly entered.

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
2.5	8	1.87	"GS, 9-12"	0819	Information Quality: Personalization	140

"It would be nice to have an Environmental Specific version of the database. Would save time running through all the options that are not required for environmental projects. AZlso, if this modual were to have only the approved environmental project titles it would save rework of having to re-input data into the system."

2.56	16	1.69	"GS, 13+"	1301	Information Quality: Completeness	73
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"ACES-PM must be standardized across the AF - inputs and quality/accuracy of data is different from caoomand to command and base to base. When AF or a MAJCOM needs data that SHOULD be in ACES, we are forced to go to the base/command and survey/data call, etc. Instead, if ACES was properly populated and accurate, all this could be done with a data report in ACES. A recent example cost us over 40 man-hours in hust this command to answer a AF question that should have been in the ACES. "

2.63	11	2.01	Other	aces-pr	System Quality: Response Time	362
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"Simplyfy the fields, better reference material, the ACES and Discoverer Guide was a good first step but it assumed knowledge of ACES where as a fools guide would be more beinficial if your knowledge is more limited. Evan now I have to still remind myself what information needs to be inserted into which field. The system speed is still bad, I have put data in hit the save and gone and made myself a hot drink come back to my desk and the thing is still trying to save the changes not good when you consider the PC speeds we have now. Still I apprciate this is not a perfect world and we all have to live with limitations, keep up the good work."

2.74	27	2.61	CGO	32E3	System Quality: Response Time	2
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"ACES interface is terrible, waiting between every mouse click is frustrating. Entering data can also be difficult due to many restrictions on what must be entered first. Because of these issues, the ACES database is out of date and inaccurate. Excel is a MUST to view data...in many cases, excel would be easier and more user friendly in general. ACES should also be integrated with other systems. My comments are based on previous work in SABER and Maintenance Engineering."

2.83	6	2.33	CGO	32E1J	Use: Easy to Use	369
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Using Access to manipulate ACES-PM Data is the key to programming sucess. Programmers should be given training on Access and how to use the basic system in order to manipulate ACES-PM data. Microsoft EXCEL Macros are also a major time saver when dealing with massive amounts of ACES-PM data.

2.87	8	2.02	"GS, 9-12"	YF 02 00	Strategic	471
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FINANCIAL AND CONTRACTING DATA SHOULD BE INTEGRATED (POPULATED) INTO THE ACES-PM PROGRAM. THAT WOULD INTEGRATE CRADLE TO GRAVE (PROBLEM IDENTIFICATION THROUGH PROJECT COMPLETION) ENGINEERING REQUIREMENTS FROM IDENTIFICATION THROUGH COMPLETION INTO ONE SYSTEM. IN OTHER WORDS FROM WORK REQUEST TO FINANCIAL AND ENGINEERING CLOSE OUT.

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
2.92	14	1.98	"GS, 13+"	YF-08012	Quality Service: Sys Admins are Reliable	134
"Our reliance on web based software demands it to work correctly. The IT people need to understand better both our need, and their effect on our work. I am the chief of programming, I live off ACES and hate it. I use oracle down loads into excel on every chance I can."						
3	10	2.4	"GS, 9-12"	0401	System Quality: Reliability	209
"There are lots of bugs in the system. Items deleted, inactivated, or archived in the program are pulled by the report generating software. In our flight, we can have 3 different people run the same spreadsheet and have different data populate each. This is difficult to work through when it comes to suspenses and the information populating the spreadsheet is not all accurate. Most of the fields in ACES-PM are N/A to projects in Environmental/Conservation."						
3.1	19	2.86	"GS, 9-12"	0819	Satisfaction	205
"Why present people with a quiz? That made absolutely no sense. I understand that you want to determine what level of user is taking the survey, but that was rediculous. "						
3.15	13	2.95	FGO	32E4	Strategic	82
"Use commercial based project management software, and get rid of ACES all together."						
3.44	9	2.31	"GS, 9-12"	032E3G	Use: Easy to Use	99
"Include user defined data sets. Include tracking for who made changes, maybe comments box for comments about what changes were made when and why. Refine filtering to be more of a WYSIWYG system in typical Windows fashion. Existing system is archaic."						
3.5	4	1.65	"GS, 13+"	020	Use: Easy to Use	595
"We have built an Oracle 10g / appache web application that all AFMC users use instead of ACES-PM for environemental projects. We built a tremendous amount of functionality that was lacking in ACES-PM. We also have many more fields and a completely different routing system since AFMC also has pollution prevention projects for weapon systems. Our application also has had a scoring system for over four years to rack and stack projects for funding. Our application is called ""EQWeb"" which stands for Enviornmental Quality. I am the PMO for this applicaiton. The next series of questions do not adequately capture the savings. By our estimate we are saving the command over 500 hours per AFMC base and over 2000 hours at the command level. We have over 250 active users. "						
3.55	18	2.36	CGO	32E3G	Information Quality: Accuracy	6
"For entering MILCON project data have field that will capture the milestones used depending on which delivery method chosen for the project. Data fields should be specific for design-build, traditional, and other delivery methods. As of now, the only fields in ACES are for traditional projects. These milestones are very different from design-build (DB) and DB should needs to be tracked better in ACES"						

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
4	5	2.52	"GS, 9-12"	0819	System Quality: Adaptability	366

Output from ACES PM needs to be in beter formatted Excel spreadhseet

4.2	5	1.16	"GS, 13+"	YC 560 02	User Developed Solution	530
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ACES Pm most include exectuain data from agents. It shoud interface with some of the financial systems automatically and the type of data in the system must be controlled for consistency and accurarcy.

6.26	15	3.12	CGO	32E3G	Use: Dependence on the System	8
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I think ACES-PM is a good database. I think a large part of the deficiencies are with the users and their commitment to keeping ACES-PM updated. Too many times users are permitted to create local databases and thus tend to neglect ACES-PM.

System ACES-PR

3.2	10	3.12	SNCO	3E971	Net Benefits	78
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I would rather use local data bases developed by the flights for use inside and outside the organization.

System ACES-RP

1.75	4	1.29	"GS, 9-12"	1170	Information Quality: Relevance	155
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"ACES RP provides too many tabs and appears to have multiple fields that are duplicated calling one item something different. This confuses the user and takes up too much time. The system needs to be drawn down and speak with someone at base level to actually view the needs of the Real Property Office. Discoverer or ACES needs to have the reports ""ready made"" to get our work done and help us to provide info to our fellow workers and our customers."

2	2	1	Other	1170	Net Benefits	294
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"When you are running reports you should not have to log on for a second time. It would be nice if you could type in the facility number instead of having to scroll through all facilities and select. Also, the option to select more than one facility number would be great."

System AFTR

1	1	0	NCO	3EOX2	Information Quality: Ease of Understanding	225
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The data tables this allows you to export are nice but it needs to be viewable in Power Point or Excel products. I belong to a Combat Comm unit were training status needs to be viewed by command personnel and improving the output product would make this easier.

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
2	1	0	Airman	3E052	System Quality: Reliability	228
"I think there should be a better platform for the AFTR program... some how make the system not run so slow. As well make it more possible for individuals to receive training (i.e. let any input a start date for tasks under JQS) also to some how allow for better training on how to use AFTR and what is required to complete certain tasks (i.e. who will be capable of signing certain tasks off, who is a trainer, certifier etc.) Personally I have issues with my supervisor not being able to sign tasks off when his record is complete up to a 7-lvl where as I am only a 5-lvl in 7-lvl upgrade training. "						
2.75	4	1.78	SNCO	3S271	System Quality: Response Time	25
"AFTR is a very good program, once all the bugs, i.e, the time out issue and there has got to be a better to list courses, etc. "						
3.66	3	3.77	NCO	3E072	Use: Easy to Use	28
"AFTR is a great IDEA, however it is much too slow and at times I put off entering data into AFTR because it is so time consuming. Also the window is too small, if one could maximize the view of the window the same way you can with other programs (i.e. internet explorer) then it would be more user friendly. The ability to highlight different tasks without having to use the Ctrl & click function would be n added benefit."						
4	2	3	SNCO	3E0X2	Net Benefits	37
I would like to be able to export more data to an excel spreadsheet like the master training plan and master task list for example.						
4.83	12	3.67	NCO	3E0X1	Use: Easy to Use	27
Bag it and go back to paper-based						
7.25	4	3.03	SNCO	3E6X1	User Developed Solution	232
"Have a local database for each base, standard throughout the AF, yet can transfer informaiton back to a central location for compilation of information needed by the USAF. "						
System						
GeoBase						
1	1	0	Other	YF-801-02	System Quality: Response Time	115
"De-centralize GeoBase. We had a good system, quick and easy to use until it went to the Air Force Portal and servers were located at command level."						
2.61	13	2.61	"GS, 13+"	YF-02	Net Benefits	23
Increase funding support for GeoBase so that data quality can be improved and data quantity increased. Decentralize GeoBase access - moving it behind the AF Portal has slowed down responsiveness significantly.						

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
3	1	0	Other	0092	User Developed Solution	612

"Several cost efficient geobase applications exist that should be incorporated into AF enterprise such as is being done by AFSOC AFMC and AMC. These ideas work well and are founded on the CE business procews. do npot allow them to be lost as a result of an another AF central IT failed system like EESOHMIS. Rather incorporate the good tools into the new system. Be wary of people who tell you they can solve your computer problems with a new system and it will be cheaper than systems the bases are using. reference EESOHMIS. That program is like weapons system acquisition...sliding baseline...spiraling costs, delayed delivery , reduced performance, fewer applications than programmed. "

3	1	0	Other	0801	Use: Dependence on the System	613
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"When you ask about GeoBase you assume it is the same air force wide. I worked at Hill AFB for many years and now at Kadena AB for the last 3 months, using GeoBase extensively as the base community planner at both bases. The user interface and the data available at both bases are different. The GeoBase on the portal is useless for my job. It is too slow, stops working too often, does not have the required data and the tools are too limited. It is difficult to say whether the Hill GeoBase or the Kadena GeoBase is better, but the is more data on the Hill system and over time has evolved to be a user friendly system. It could be used as a model for all air force GeoBase systems (from a power user's perspective)."

3	1	0	Contractor	NA	Strategic	611
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"GeoBase would be improved by having an adovate at the pentagon who can educate other functionals on the benefits and push the guidance down to MAJCOM levels to work. Currently, only MAJCOM levels are working this issue but it takes everyone to make an impact. "

System IWIMS

1	1	0	"WG, 6-10"	3806	ation Quality: Unauthorized Modification	306
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First; get rid of CSLs and go to NSNs Second; do not dealeat CSLs with out permisson of users. Third; DO NOT dealeat any CSLs that are are attached to 3952s!

1.33	3	0.47	Other	0801	Satisfaction	35
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IWIMS is what it is. When it was new it was the best thing available to do what needed to be done. Some important data is only available on IWIMS so I continue to use it. Do not replace it with something as bad and difficult to use as ACES PM.

2	2	1	"GS, 9-12"	3E000	Use: Easy to Use	34
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Develop a system that would capture info on real property from craddle to grave.

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
2.52	23	1.9	"GS, 9-12"	2S000	System Quality: Adaptability	49
"Standardize Supply, CE, Finance, and Contracting (or Prime Vendors) into a consolidated, web-based system that your profile can get you access into what is required in your job, allowing simultaneous updates and status instead of re-entry of data into multiple systems and manual review to verify transfers."						
3.66	9	2.44	"GS, 5-8"	1603	ormation Quality: Ease of Understanding	1
"IWIMS IS GREAT. IF THE USERS WORKED THE SYSTEM THE WAY IT IS DESIGNED AND KNOW HOW IT WORKS, ALL WOULD LOVE THE SYSTEM. NO NEED TO CHANGE. MONICA HUGHES, FAIRCHILD AFB, WA."						
4	3	1.41	SNCO	3E471	ormation Quality: Ease of Understanding	523
Th report feature is some what too complex. simple search feature when running a report.						
4.2	5	2.71	Other	MODCIV	Strategic	236
"The system uses a lot of waste paper when printing reports, releasing BOMS and some other functions. It is a waste of resources. Could they be reformatted to save excess paper being used?"						
4.25	8	2.86	"GS, 9-12"	0301	System Quality: Reliability	14
"IWIMS needs to go away and the work orders, labor, etc with finance systems need to go to ACES now or something all new for all CE systems"						
4.5	2	3.5	NCO	3E351	User Developed Solution	71
"I would like to see a more user friendly System, that younger troops would feel confident using. IWIMS uses a series of numbers to direct you to different places. I would like to see a list of choices actually explaining where and or what you want to do to. Also i would like to see a base driven system. Have it still reprotable to outside agencies, but full control remains to the CE unit. This would also allow us to use it at any time, not having to shut it down at certain times of the day and would have less system down time. "						
4.62	8	2.44	"GS, 9-12"	CEOSP	Net Benefits	223
"Greetings, I have used the IWIMS Sytem for one year now in a planning capacity. As some of my projects are being duplicated across the base, I would like to be able to copy the whole project and just change toe work order number. This would significantly scale down the time required to complete a project via the planning portion of a project. "						
4.8	5	2.71	NCO	3EO71	Use: Easy to Use	48
"IWIMS shuts down every day and at the end of the month, not sure for what reason. Just think we could move out of the green screen program and move in to this century."						

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
5	1	0	Other	4701	Use: Easy to Use	112

I have no comment.

5	1	0	"GS, 5-8"	3E6X1	Information Quality: Completeness	126
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A HUGE improvement would be to feed data from Engineering back to IWIMS(old system) so that that customer service can give project numbers to clients without them having to hang up and call someone else

5.33	6	3.14	NCO	3E6X1	Information Quality: Accuracy	257
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System still works fine

5.5	4	2.5	"GS, 9-12"	General Engine	Net Benefits	254
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Continue work with ACES-OPS. Should be able to get a capable contractor to develop the system. Pool resources AF wide. Individual Bases have unique inhouse db that can be used as references.

6.8	5	1.93	"GS, 5-8"	0561	Use: Easy to Use	33
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still learning the system

7	1	0	"GS, 9-12"	0802	Use: Easy to Use	127
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Update IWIMS data such as manhours and tasks.

APPENDIX B: Comments (Management and System Admin)

Comments, Managers and Administrators

	Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
System							
ACES-FD	1	1	0	SNCO	3E700	Use: Easy to Use	32
Submitting work orders to programs such as ACES-FD seems to be of no use. The users have ideas as to how to better the product but we never see changes we requested.							
	5	2	4	Other	2151	System Quality: Adaptability	5
Allow ACES-FD to be interfaced with E911 telephone sytems.							
	7	2	2	"GS, 9-12"	3E791	System Quality: Reliability	1
"This survey is as bad as the sytem- just sent me to a ""querry failed"" mode after taking 15 minutes to complete in hopes to improve the system- typical"							
System							
ACES-PM	1.4	5	0.8	FGO	32e3c	Use: Easy to Use	66
ACES-PM can do a lot, but it has too many data fields. System can be slow. Few people know how to build reports. Transferring data into PowerPoint is a skill in itself. Limited manpower/time to update. Programming uses ACES-PM. Engineers and inspectors tend to update the PowerPoint slide or Excel spreadsheet that ends up being shown with the 4 to 5 data points that really matter to senior leadership.							
	2	1	0	CGO	32E3G	System Quality: Response Time	62
Speed the system up. It takes too long to do a search or enter in data. Changing what any data takes about 30 seconds per change. This is a total waste of time.							
System							
ACES-PR	1	1	0	Contractor	3E671	Information Quality: Accuracy	87
Interface and work toghter to help prevent all of the extra work it takes to enter the data							
	1	1	0	SNCO	3E971	Information Quality: Accuracy	88
ACES-PR needs to be kept up to date to be alined with the changes that occur with the CE community and SORTS							

	Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
System AFTR	4	2	3	"GS, 13+"	3E791	System Quality: Reliability	7
	"Work the bugs out of systems first before we, the customers get. I have wasted so many hours through the years because of new systems and getting inputted data dropped"						
	4.33	3	3.39	NCO	3S271	User Developed Solution	9
	"Go back to paper based AF Form 623 Training Records, get rid of AFTR"						
System General	1	1	0	FGO	C32E3G	Use: Easy to Use	19
	The system must be user friendly and should appear to operate in a Windows format for easy use and simplified training.						
	1	2	0	FGO	32E4G	Use: Easy to Use	57
	Would like system to spit out standard slides/info to save translating into excel/powerpoint						
	1	2	0	FGO	C32E3G	Use: Easy to Use	20
	Report extraction MUST be easier						
	1.75	4	1.29	Contractor	N/A	Use: Easy to Use	18
	"Whatever new IT system is designed, take the time to design around the data entry users; historically, AF systems are only convenient to those pulling reports, while the data entry folks at the installations have a very difficult time using the systems."						
	2.13	30	1.68	"GS, 13+"	032E3G	System Quality: Adaptability	11
	Unfortunately, most of the software we use at the base level is written from a MAJCOM or HQ perspective. Typically, this means many hours are wasted by several to save time or benefit a few. Additionally, the software is not "presentation friendly" and the data has to be manipulated by users/other programs to present results.						
	3	1	0	FGO	32E	Information Quality: Completeness	61
	Major Problem Most CE systems do not communicate with each other.						
	3.5	8	1.8	"GS, 9-12"	335	User Developed Solution	46
	Involve BASE IT people when developing systems. Do not contract-out develop and maintenance. AF has already the right people to do it						

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
5	1	0	FGO	C32E3	Strategic	59

"Scrap AF-developed IT solutions for CE IT requirements. SSG for example, is slow to respond and are too far removed from the typical end-user to develop a system or solution that is geared to they use."

6	1	0	SNCO	3E000	ormation Quality: Ease of Understanding	10
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AS with any system that has been developed over the last 15 or so years there should be a deliberate plan to implement it to the CE community. So many times we are provided a tool (computer technology in general) and fumble our way through its usage until hopefully we learn to use it effectively.

System GeoBase

1	1	0	"GS, 13+"	none	Net Benefits	90
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"Distributed editing of geospatial data through ArcGIS server, would allow more users access to the data while reducing the software footprint on the desktop and in the budget"

4.72	11	3.51	FGO	32E4	Strategic	42
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Standardize GeoBase architecture and viewers across the AF through the AF Portal. Improve training for 3E5s. Create naming and data standards.

5	1	0	"GS, 13+"	0801	System Quality: Response Time	35
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We are not currently manned to implement Geo-base. Need Geo-base techs desperately.

5	1	0	FGO	32E3G	Satisfaction	4
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Complete merge of GeoBEST and CAPP into GeoEXP

System IWIMS

1	2	0	FGO	32E3	Information Quality: Relevance	8
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Need a windows based program compatible w/useable data report tools/manipulation.

1	1	0	"GS, 9-12"	0355	Use: Easy to Use	3
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When administrative passwords need to be reset every 45 days to be able to contact Guther to reset them not to have to go to two different locations to reset the MD10 and the ABQ16a passwords.

1	1	0	FGO	O32E3G	Use: Easy to Use	31
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"Webbased application that is modern, user friendly and quickly processes information"

Average Agreement	Number of Reviewers	Agreement St Deviation	Commentor Rank	AFSC	Comment Category	ID
2	1	0	FGO	32E3G	Use: Easy to Use	63

A more user friendly system for IWIMS. Something that is more of a point and click with more ways to manipulate data. Also, something that easily transfers data to other government approved software (i.e. Power Point, Excel, Access, etc). This could take the place of a software that allows for more manipulation.

3	2	2	FGO	C32E3G	Information Quality: Relevance	6
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ACES & IWIMS should be scrapped and replaced with a COTS system. However, it must capture all the data in IWIMS and have the flexibility to write and tailor reports. It should also capture shop rates, etc or recognize the second/third order effects of not. Webbased sites like the portal & ADLS do not offer enough access. Look at the problems AFTR is having right now. Centralized control...decentralized execution!

APPENDIX C: User Survey Questions

Section Title	Question Number	Question
Information Quality	1	SIS provides the precise information you need
Information Quality	2	SIS provides output that is exactly what you need
Information Quality	3	SIS provides sufficient information to enable you to do your tasks
Information Quality	4	SIS has errors in the program that you must work around
Information Quality	5	Are you satisfied with the accuracy of SIS?
Information Quality	6	Are the output options (print types, page sizes allowed for, etc.) sufficient for your use?
Information Quality	7	Is the information provided helpful regarding your questions or problems?
Information Quality	8	Information is protected from unauthorized modification
System Quality	1	SIS can flexibly adjust to new demands or conditions
System Quality	2	SIS effectively integrates data from systems servicing different functional areas
System Quality	3	SIS is versatile in addressing data needs as they arise
System Quality	4	SIS effectively integrates data from a variety of data sources within the organization
System Quality	5	I can count on SIS to be up and available when I need it
System Quality	6	Response time: The elapsed time between a user-initiated request for SIS service and a reply from the SIS system (seconds)
System Quality	7	Time Required to navigate from place to place within SIS (seconds)
System Quality	8	While using SIS, what percent of your time is spent waiting for SIS (0 - 100)
System Quality	9	SIS is user friendly
System Quality	10	SIS is easy to use
Service Quality	1	When users have a problem, SIS administrators show a sincere interest in solving it
Service Quality	2	SIS administrators are dependable
Service Quality	3	SIS administrators provide their services at the times they promise to do so
Service Quality	4	SIS administrators give prompt service to users
Service Quality	5	SIS administrators are always willing to help users
Service Quality	6	The behavior of SIS administrators instills confidence in users
Service Quality	7	SIS administrators are consistently courteous with users

Service Quality	8	SIS administrators have the users' best interests at heart
Service Quality	9	What is your satisfaction with the quality of service provided by SIS administrators?
Use	1	I am dependent on SIS
Use	2	How many hours a month do you spend using SIS? (hours)
Use	3	How much experience do you have with SIS?
Satisfaction	1	What is your overall satisfaction with SIS?
Satisfaction	2	What is your overall satisfaction with Air Force Portal?
Satisfaction	3	What is your overall satisfaction with Leave Web?
Satisfaction	4	What is your overall satisfaction with TDY Defense Travel System?
Satisfaction	5	What is your overall satisfaction with MyPay?
Satisfaction	6	What is your overall satisfaction with Virtual MPF?
Satisfaction	7	What is your overall satisfaction with GeoBase?
Effectiveness	1	Using SIS enables me to accomplish job-related tasks more quickly
Effectiveness	2	Using SIS improves my job performance
Effectiveness	3	Using SIS in my job increases my productivity
Effectiveness	4	Using SIS enhances my effectiveness on the job
Effectiveness	5	Using SIS makes it easier to do by job
Effectiveness	6	I find SIS useful on my job
User Developed Solutions	1	Microsoft Excel or Access or additional software is needed to process and present SIS data
User Developed Solutions	2	It would be helpful for other units to have information they could update in relation to SIS
User Developed Solutions	3	It would be helpful to develop your own applications with access to CE Information Systems
User Developed Solutions	4	Use of SIS is not optional, i.e. use is mandatory
Strategic Level	1	Do you have a preference for Government Developed Systems (GOTS) or Commercial Developed Systems (COTS)?
Strategic Level	2	Do you prefer to see the development of CE systems using Open Source Software or Proprietary Software?
Strategic Level	3	Enterprise Relational Systems can be distributed or centralized; which do you prefer for CE Information Systems? (i.e. located at units or located at Gunther)
Quiz	1	In a Relational Database which of the following is required?
Quiz	2	Normalization of a Database requires which of the following:

Quiz	3	Which of the following is the most popular web server software today?
Quiz	4	Which of the following is a user most likely to interface with?
Quiz	5	In a discussion of EA (Enterprise Architecture) or ERP (Enterprise Resource Planning) the term Enterprise refers to:

APPENDIX D: Manager Survey Questions

SectionTitle	Question Number	Question
Information Quality	1	Rate SIS Information Quality as a product of the following terms: (completeness, ease of understanding, personalization, relevance, security)
System Quality	1	Rate SIS System Quality as a product of the following terms: (adaptability, availability, reliability, response time, usability)
Service Quality	1	Rate SIS Service Quality as a product of the following concepts: (assurance, empathy, responsiveness from SIS personnel)
Use	1	You and your staff relies on SIS reports versus other means of communicating SIS information such as e-mail, Excel, Access Databases, Power Point, etc...
Satisfaction	1	What is your overall satisfaction with SIS?
Satisfaction Comparison	1	What is your overall satisfaction with Leave Web?
Satisfaction Comparison	2	What is your overall satisfaction with TDY Defense Travel System?
Satisfaction Comparison	3	What is your overall satisfaction with MyPay?
Satisfaction Comparison	4	What is your overall satisfaction with Virtual MPF?
Satisfaction Comparison	5	What is your overall satisfaction with Air Force Portal?
Effectiveness	1	Overall net benefit of SIS in terms of Cost Savings
Effectiveness	2	Overall net benefit of SIS in terms of resource optimization
Effectiveness	3	Overall net benefit of SIS in terms of timely information
Effectiveness	4	Overall net benefit of SIS in terms of time savings
Strategic Level	5	Microsoft Excel, Access, or additional software is needed to process and present SIS data
Strategic Level	6	It would be helpful for users to develop their own applications with access to SIS
Strategic Level	7	It would be helpful for other units to have information they could update in SIS
Strategic Level	8	Use of SIS is not optional, i.e. use is mandatory
Strategic Level	1	Enterprise Relational Systems can be distributed or centralized; which do you prefer for CE Information Systems? (I.e. decentralized could be located at units or centralized is located at Gunther)
Strategic Level	2	Rank the following concepts with regard to CE info systems by priority from your perspective
Strategic Level	3	Do you have a preference for Government Developed Systems (GOTS), or Commercial Developed Systems (COTS)?
Quiz	1	In a relational database which of the following is required?
Quiz	2	Normalization of a database requires which of the following:

Quiz	3	Which of the following is the most popular web server today?
Quiz	4	Which of the following is a user most likely to interface with?
Quiz	5	In a discussion of EA (Enterprise Architecture) or ERP (Enterprise Resource Planning) the term Enterprise refers to:

APPENDIX E: System Comparison, System Speed (User Reported)

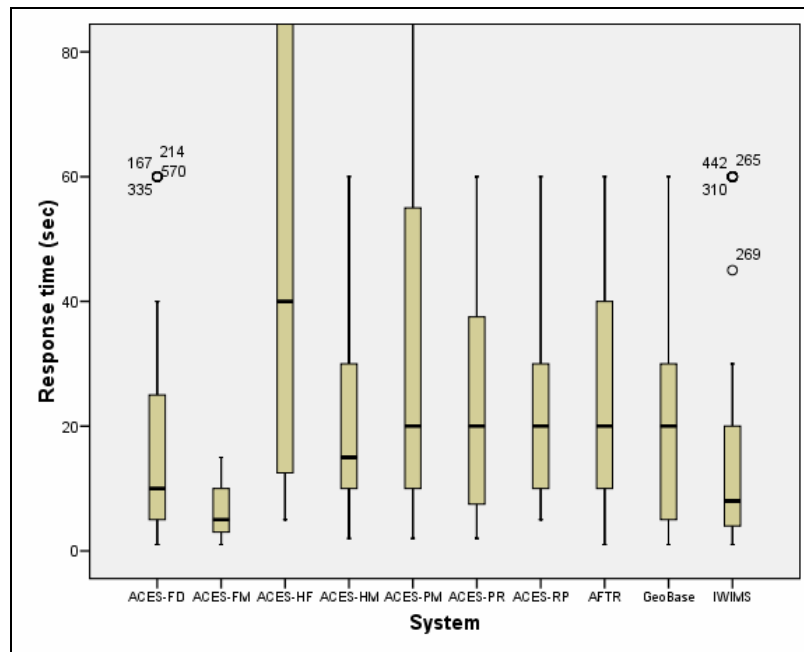


Figure 10: Systems Response Time

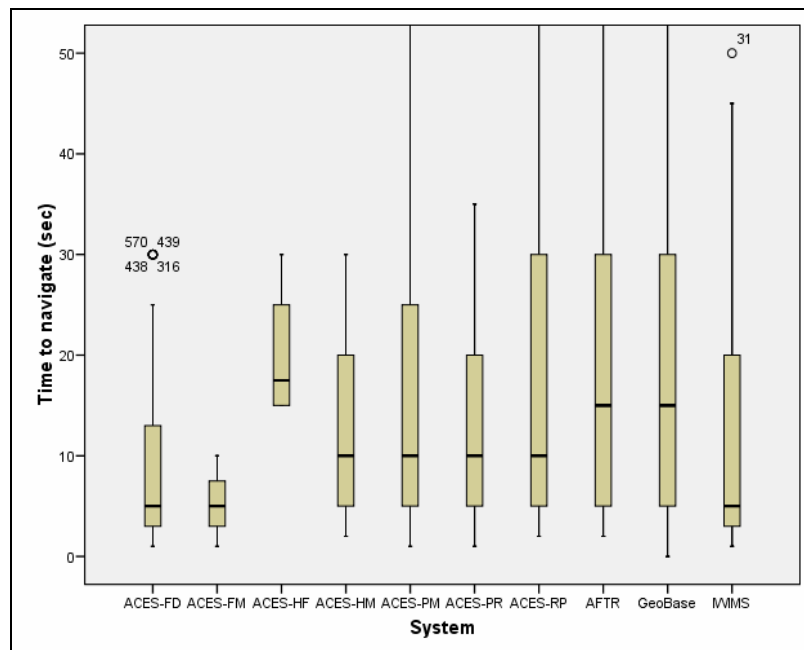


Figure 11: Time to Navigate From Place to Place

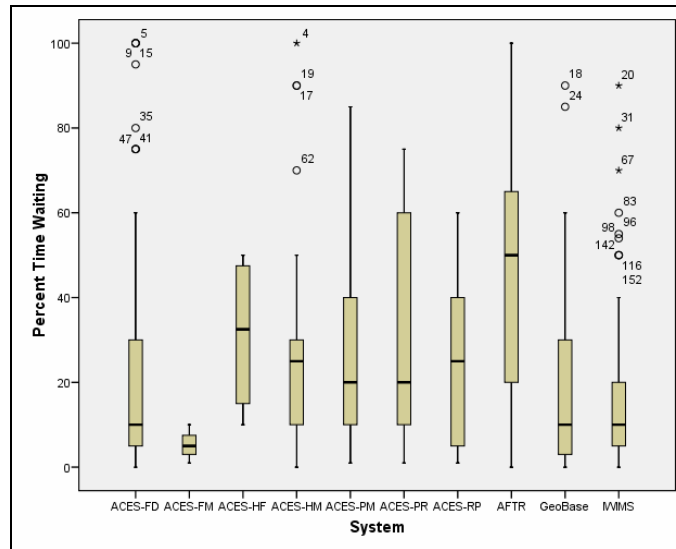


Figure 12: Percent of Time Waiting For System While Using It

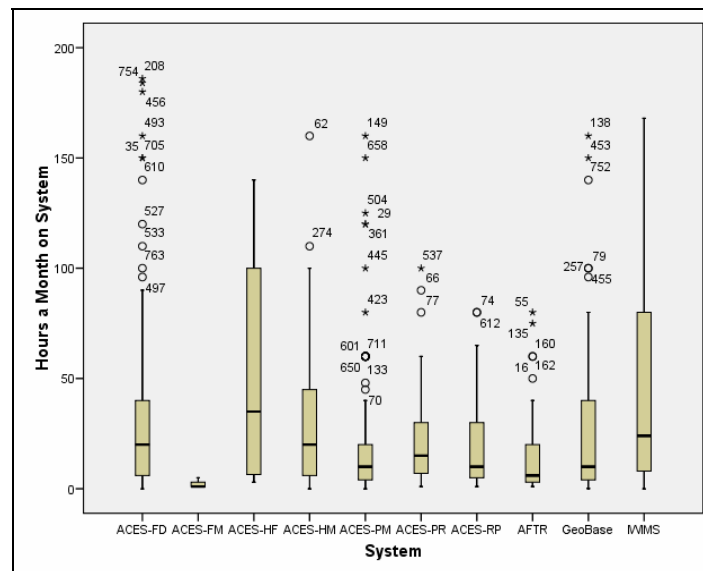


Figure 13: Hours a Month Using System

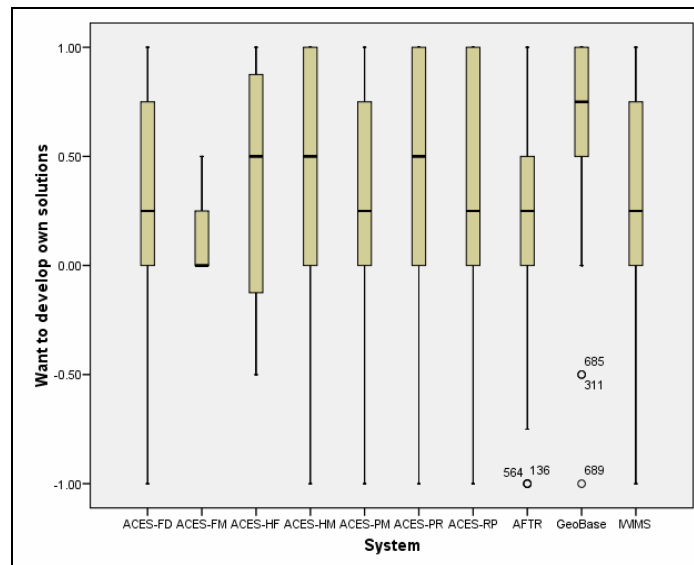


Figure 14: Users Want to Develop Their Own Solutions

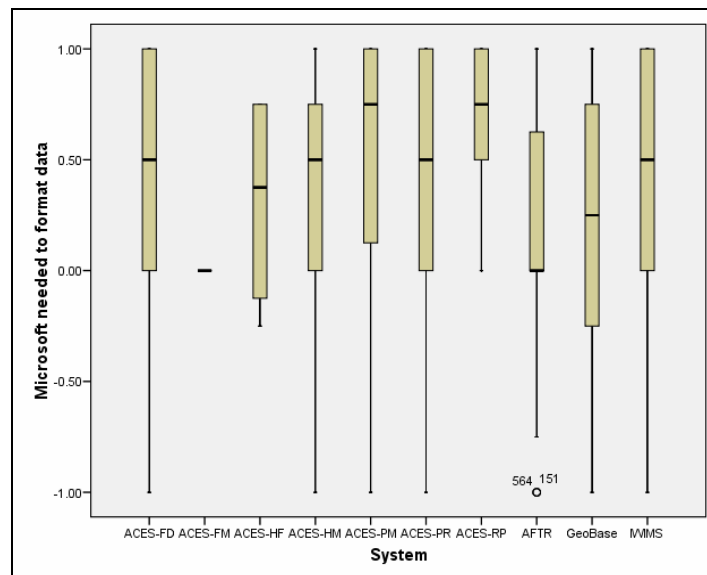


Figure 15: Additional Formatting Required from Microsoft Applications

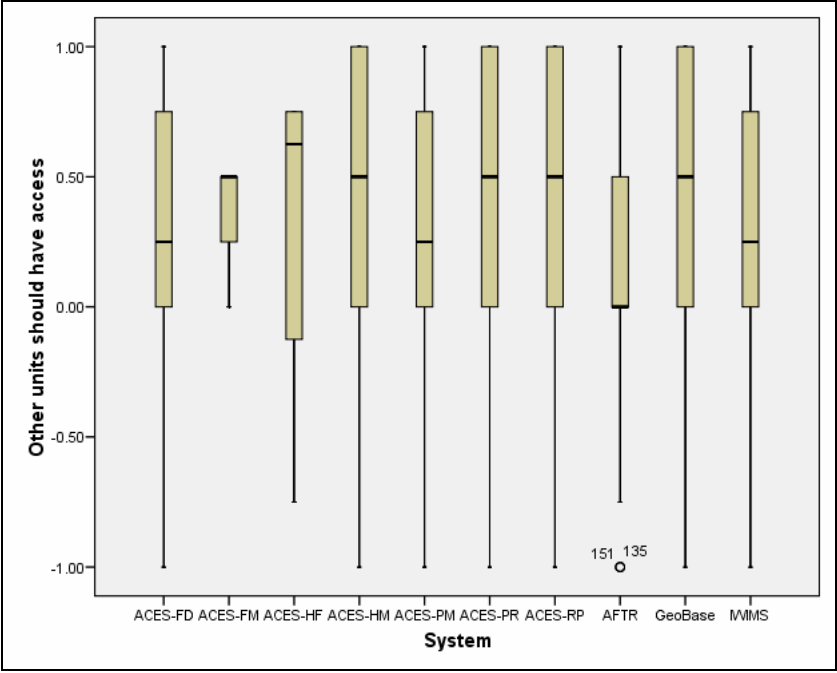


Figure 16: Other Units Should Integrate with Systems

APPENDIX F: User Software Preferences

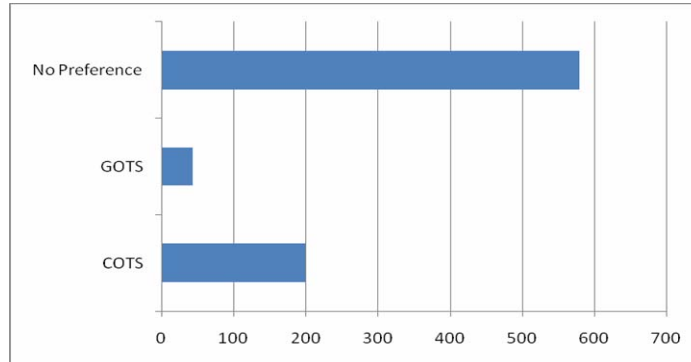


Figure 17: User Software Preference (COTS/GOTS)

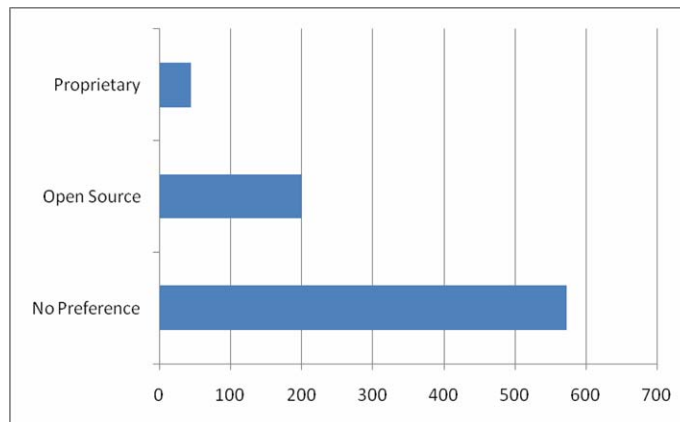


Figure 18: User Software Preference (OSS/COTS)

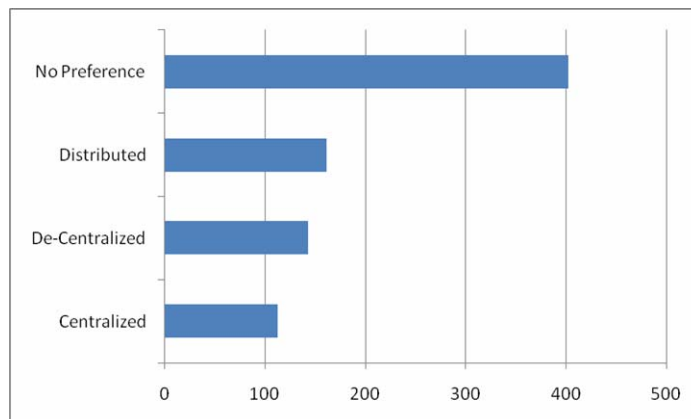


Figure 19: User Preference (System Server Location)

APPENDIX G: System Comparison, Management Responses

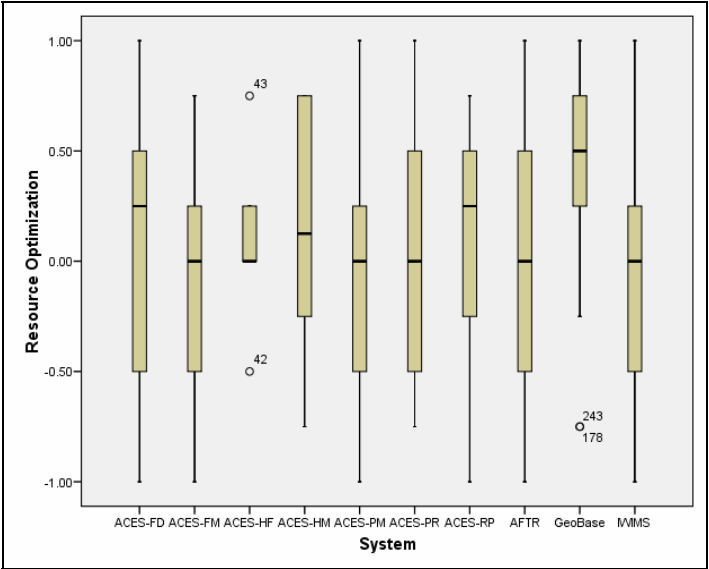


Figure 20: Resource Optimization by System

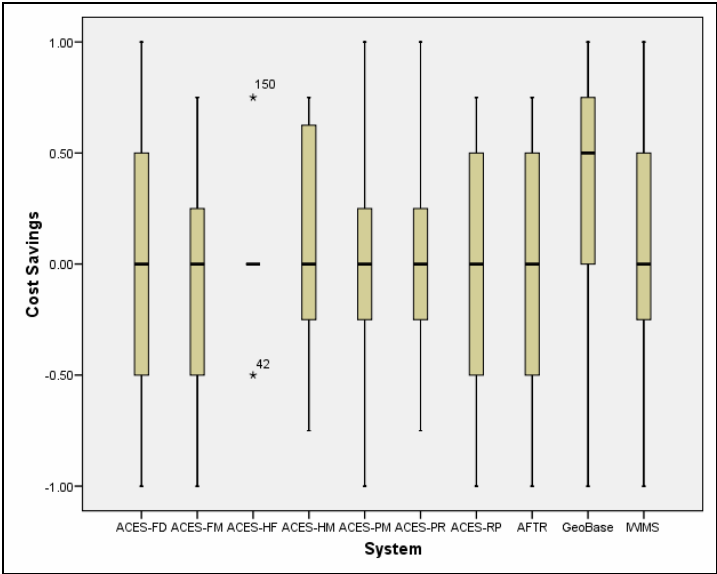


Figure 21: Cost Savings by System

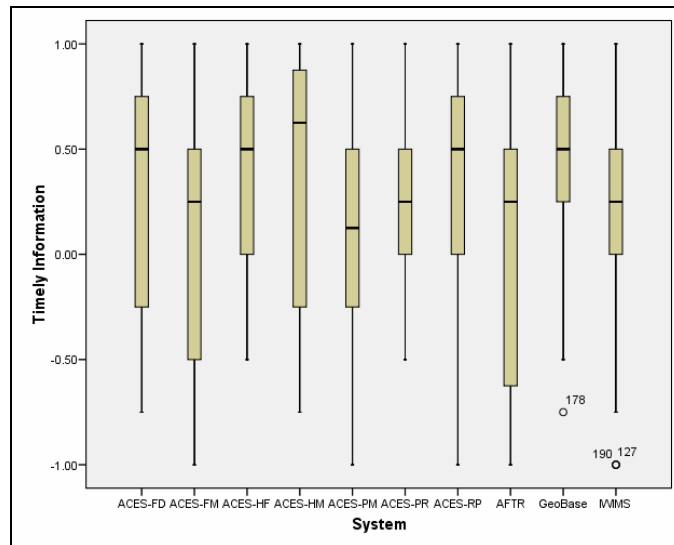


Figure 22: Timely Information by System

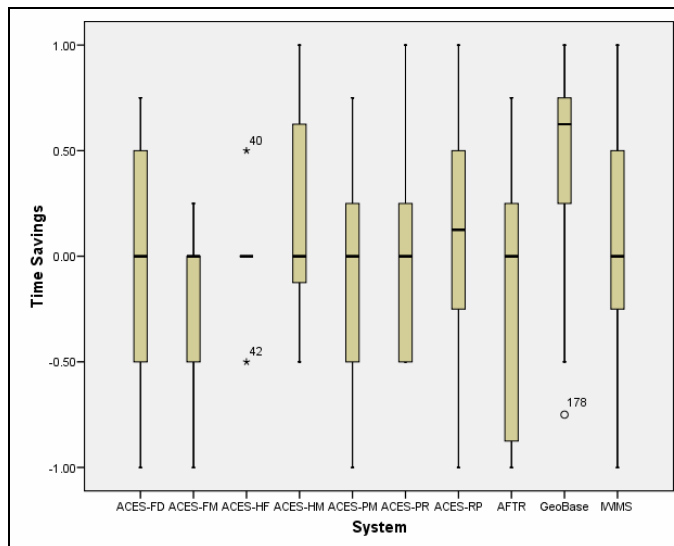


Figure 23: Time Savings by System

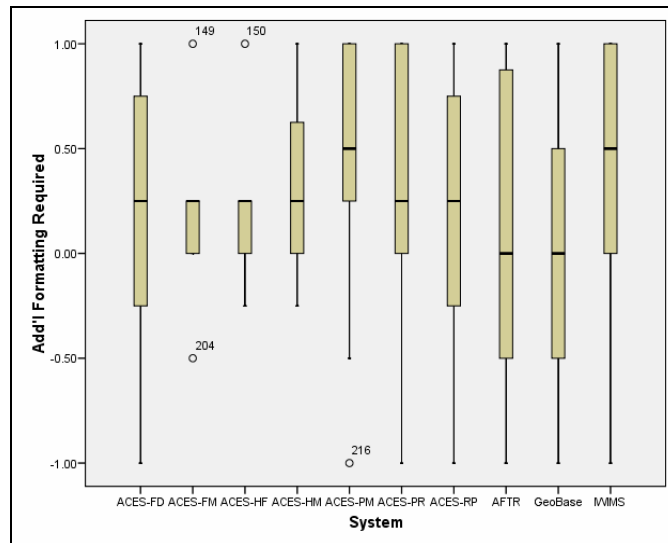


Figure 24: Additional Formatting Required by System

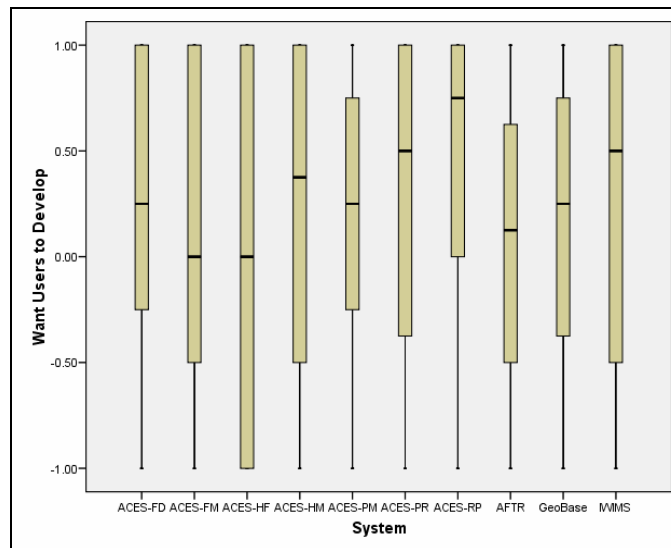


Figure 25: Want Users to Develop Their Own Solutions

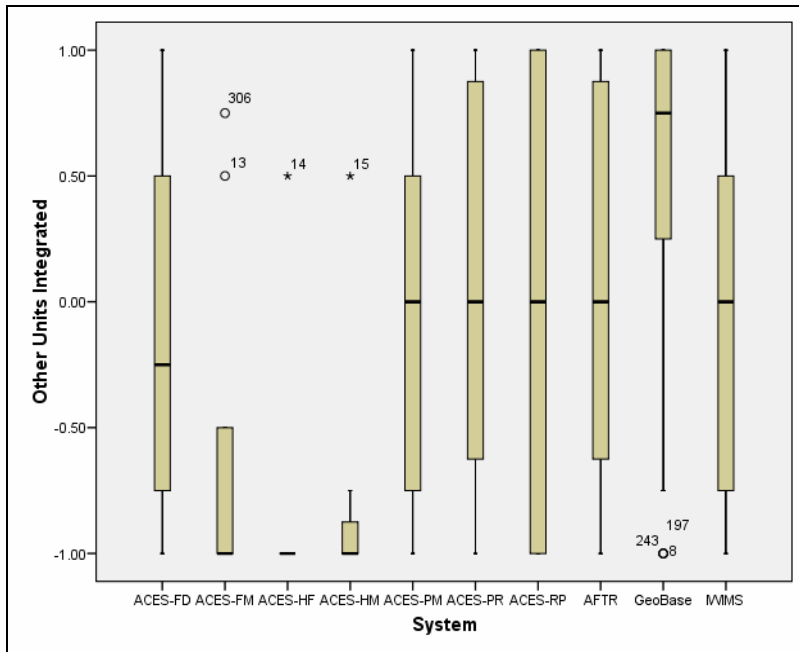


Figure 26: Other Units Should Integrate w/ Systems

APPENDIX H: GeoBase Comparison Across Major Commands

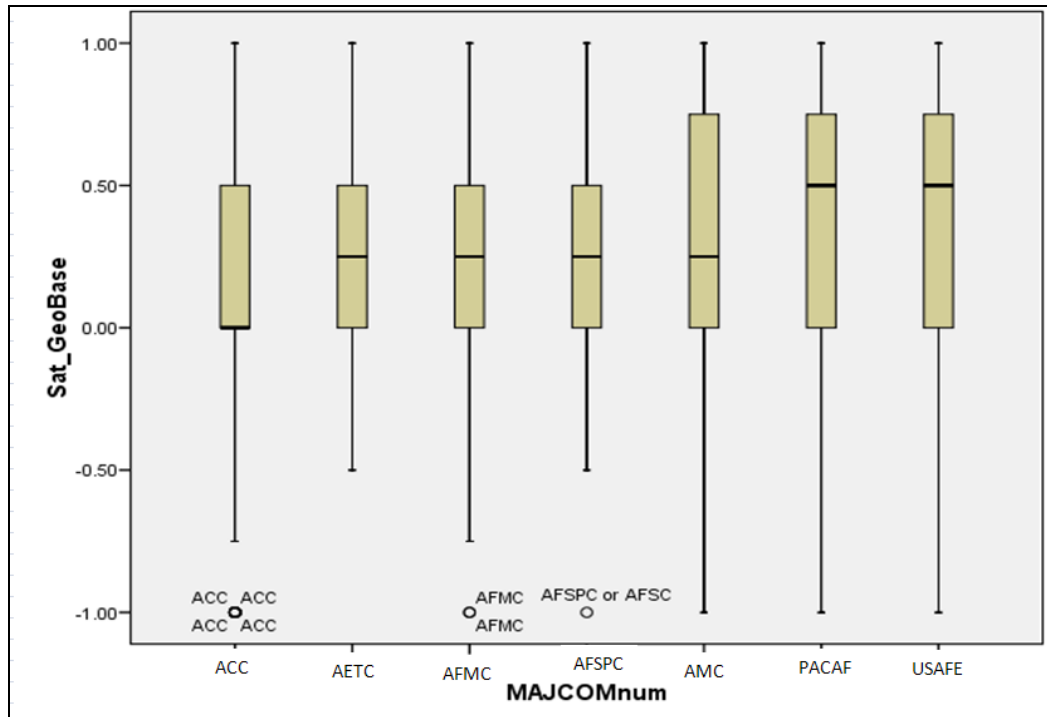


Figure 27: MAJCOM GeoBase Comparison

Using ANOVA to compare means between Major Commands the only differences that are of statistical significance are the differences between ACC vs. AMC, ACC vs. AETC, and ACC vs. PACAF. Here AMC, AETC, and PACAF have more satisfying systems to users than ACC within 95% confidence.

APPENDIX I: Participation by base

	Frequency	Percent
HOLLOMAN	92	8.2
MOODY	70	6.2
KADENA	65	5.8
EGLIN	56	5.0
LANGLEY	53	4.7
MOUNTAIN HOME	50	4.5
LAJES	37	3.3
RAMSTEIN	37	3.3
NELLIS	36	3.2
McCHORD	33	2.9
HICKAM	31	2.8
WRIGHT-PATTERSON	27	2.4
BEALE	23	2.0
LAUGHLIN	19	1.7
OFFUTT	19	1.7
MILDENHALL	18	1.6
VANDENBERG	17	1.5
ALCONBURY	16	1.4
AVIANO	15	1.3
BOISE	14	1.2
PATRICK	14	1.2
SEYMOUR JOHNSON	14	1.2
YOKOTA	13	1.2
ELLSWORTH	12	1.1
LUKE	12	1.1
SCOTT	12	1.1
McCONNELL	11	1.0
RANDOLPH	11	1.0
ARNOLD	10	0.9
DAVIS-MONTHAN	10	0.9
GRAND FORKS	10	0.9
BROOKS	9	0.8
OSAN	9	0.8
LAKENHEATH	8	0.7
McGUIRE	8	0.7
PETERSON	8	0.7
ALI AL SALEM	7	0.6
ANDERSEN	7	0.6
BARKSDALE	7	0.6
KUNSAN	7	0.6
L.A. AIR STATION	7	0.6
ALTUS	6	0.5
CHARLESTON	6	0.5
F.E. WARREN	3	0.3
FAIRFORD	3	0.3
MENWITH HILL	3	0.3
DOVER	2	0.2
DYESS	2	0.2
EIELSON	2	0.2
LITTLE ROCK	2	0.2
AL DHAFRA	1	0.1
ANDREWS	1	0.1
SHEPPARD	1	0.1

Note* Some responses are not accounted for by base. The values in this table are calculated by lumping responses from the same IP address to respondents who identified their base.

APPENDIX J: Website Development and Code

The website <http://www.misevaluation.org> was developed and outsourced by the researcher as part of the learning experience for information management systems. The website was built using open source software. The database engine used is Sun Systems recently acquired MySQL version 5.0.45. MySQL is an open source database engine heavily used by web developers. PHP Hypertext pre-processor was used to make a server side dynamic HTML generated website. This means that information added to the database was taken by PHP and used to generate the web survey pages. In this situation any information changed in the database immediately changed information in the website. Additionally, PHP was used to collect survey data and inserted it into the database using Structured Query Language SQL. Small amounts of JavaScript were used along with HTML and PHP pages to perform some client side functions. These functions included ensuring that all fields were formatted properly before a participant could move on. An example of this is making sure the user entered the proper amount of digits for his bank routing and account numbers before moving to the next section.

Web Site Code

Index Page (PHP)

```
<?php
if(isset($_POST['submit']))
{
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else
{
    include 'thesisconfig.php';
    include 'thesisopendb.php';

    if(isset($_POST['addbase']))
    {
        $IPvalue = $_SERVER['REMOTE_ADDR'];
        $base = $_POST['base'];
        $query = "INSERT INTO base_ip (IP, baseID) values ('$IPvalue', '$base')";
        mysql_query($query);
    }
    ?>
    <!--<link rel="stylesheet" type="text/css" href="http://<?php echo
    $_SERVER['REMOTE_ADDR'];>/style2.css" /> -->

    <html>
    <head>
    <style type="text/css">
    body {
    background-image: url(Vertical1.jpg);
    background-repeat: repeat-x;
    }
    </style>
    </head>
    <body style="text-align: center">
        &nbsp;<span style="font-size: 16pt"><form method="post" name="welcome">
            <table style="width: 1134; height: 131px; ">
                <tr>
                    <td style="width: 242px; height: 173px; background-image:
url(Civil_Engineer_Badge_1year240.gif); background-position: center center; background-
repeat: no-repeat;">
                        <span style="color: #0000ff; text-decoration: underline;
background-position: center bottom; background-image:
url(Civil_Engineer_Badge_1year.gif);"></span></td>
                        <td style="width: 650px; height: 173px;">
                            <p align="center" class="MsoNormal" style="margin: 0in 0in 0pt;
text-align: center;
                                mso-layout-grid-align: none">
                                    <i><span style="color: white; font-family: TimesNewRoman;
mso-bidi-font-family: TimesNewRoman; font-size: 16pt;">
                                        <strong>
Management Information System (MIS) Evaluation
                                        </strong></span></i></p>
                                    <p align="center" class="MsoNormal" style="margin: 0in 0in 0pt;
text-align: center;
                                mso-layout-grid-align: none">
                                    <i><span style="color: white; font-family: TimesNewRoman;
mso-bidi-font-family: TimesNewRoman; font-size: 16pt;">
                                        <strong>
```

```

Student Thesis at the Air Force Institute of Technology
sponsored by:</strong></span></i></p>
<p align="center" class="MsoNormal" style="margin: 0in 0in 0pt; text-align: center;
mso-layout-grid-align: none">
    <i><span style="color: white; font-family: TimesNewRoman;
mso-bidi-font-family: TimesNewRoman; font-size: 16pt;">
        <strong>
            Air Force Civil Engineer Support
        </strong></span></i></p>
Agency</strong></span></i></p>
    <p style="text-align: center">
        <input name="submit" type="submit" id="submit2" style="font-
size: 16pt;
            width: 151px; height: 44px" value="Enter" />&nbsp;</p>
    <p style="text-align: center">
        Survey Period: 27 Jan - Feb 29 2008 (final extention)</p>
    </td>
    <td style="width: 242px; height: 173px; background-image:
url(Civil_Engineer_Badge_7year240.gif); background-position: center center; background-
repeat: no-repeat;">
        <span style="color: #0000ff; text-decoration:
underline"></span></td>
    </tr>
    <tr>
        <td style="color: gray; width: 242px; text-align: center; valign:
top">

<?php
$query = "SELECT AVG(surveyminutes) AS average FROM surveytime_u WHERE surveyminutes < 20
AND surveyminutes > 2;";
$result = mysql_query($query) or die('Error, query failed');
while($row = mysql_fetch_array($result))
{
    $average = $row['average'];
}
mysql_free_result($result);
$average = number_format($average, 2);
?><H4 style="color: black">User Survey Time </H4>
<H4 style="color: black"><?php echo $average.' min average';?></H4>
<br />
<H4>System User Participation</H4>

<br />
<?php
$query = "SELECT SIS, target_u, COUNT(*) as 'count' FROM match_system_u GROUP BY SIS;";
$result = mysql_query($query) or die('Error, query failed');
while($row = mysql_fetch_array($result))
{
    $value = $row['count'] / $row['target_u'];
    $value = number_format($value, 2)*100;
    echo $row['SIS']; ?><br /> <?php
    echo $value; ?> % of Goal <br /> <br /> <?php
}
mysql_free_result($result);
?></td>
        <td style="width: 650px; "> <!-- background-image: url(AFIT3.jpg);
background-position: top center; background-repeat: no-repeat; -->
        <p class="MsoNormal" style="margin: 0in 0in 0pt; mso-layout-grid-
align: none">
            <i><span style="color: black; font-family: TimesNewRoman;
mso-bidi-font-family: TimesNewRoman">
                </span></i>&nbsp;</p>
            <p class="MsoNormal" style="margin: 0in 0in 0pt; mso-layout-grid-
align: none; text-align: center;">
                Widest dissemination is desired</p>
            <p>
                Your participation in this study is voluntary and you may
                choose to quit at any

```


Donald C. Crabtree, Capt,
 USAF

Student, Air Force Institute of Technology
 School of Engineering & Management

Statement of 1974

Privacy Act

Executive Survey Time

Executive Participation

Sample Questions:

What Percent of your time is spent waiting for this system while using it

```

        How satisfied are you with the availability of the system?<br />
        <br />
        How reliable is the information in this system?<br />
        <br />
        Do System Administrators make updates in a timely fashion?</td>
    <td style="width: 650px; height: 22px; vertical-align: top; text-align: center;">
        (You cannot view other base participation with this tool)
    <br />
        Enable this feature by indicating that your base is participating
        in this study<br />
        <select name="base" id="Select1" style="width: auto">
        <option selected="selected"></option>
        <?php
        $query2 = "SELECT ID, base FROM base ORDER BY base ASC";
        $result2 = mysql_query($query2) or die('Error, query failed');
        while($row2 = mysql_fetch_array($result2))
        {
            <?php
            <option value="<?php echo $row2['ID']?>"><?php echo $row2['base']?></option>
            <?php
            }
            //start and stop PHP to end the loop
            mysql_free_result($result2);
        }
    </select>&nbsp;<br />
    <input name="addbase" id="Submit1" type="submit" value="submit" />
    <br />
    <br />
    Thank You !!
<br />
<?php
$IPvalue = $_SERVER['REMOTE_ADDR'];

$query4 = "SELECT SIS, flight FROM system";
$result4 = mysql_query($query4) or die('Error, query failed');
echo 'Judging from your IP address';
?>
<br />
<?php
echo 'participation from your unit is as follows';
?>
<br />
<table style="width: 300px" bordercolor="#0000cc" border="1">
<tr>
<td> <strong>Function</strong> </td>
<td> <strong>System</strong> </td>
<td style="text-align: center"> <strong>Participants</strong> </td>
</tr>
<?php
// This function is trying to show zeros for systems that have no responses
//for a unit. The query3 only gets those that have had participation from a base
//by it's IP. I want Commanders to see the systems that have no participation, and
//so I'm doing a work around because I don't know how to make a query do what I want.
//It doesn't show blanks.
while($row4 = mysql_fetch_array($result4))
{
    $tempvalue = 0;
    $query3 = "SELECT SIS, COUNT, IP FROM Count_base_participation_by_SIS_Name WHERE IP =
'$IPvalue'"; // 131.10.254.61
    $result3 = mysql_query($query3) or die('Error, query failed');
    while ($row3 = mysql_fetch_array($result3))
    {
        if ($row4['SIS'] == $row3['SIS'])
        {
            $tempvalue = 1;
        }
    }
}
</tr>

```

```

<td> <?php echo $row4['flight'];?> </td>
<td> <?php echo $row3['SIS'];?> </td>
<td style="text-align: center"> <?php echo $row3['COUNT'];?> </td>
</tr>
<?php
} // ends the if statement
} // ends the secondary loop
if ($tempvalue == 0)
{
?>
<tr>
<td> <?php echo $row4['flight'];?> </td>
<td> <?php echo $row4['SIS'];?> </td>
<td style="text-align: center"> <?php echo '0';?> </td>
</tr>

<?php
} // end the if statement
} // end the primary loop
mysql_free_result($result3);
mysql_free_result($result4);
include 'closedb.php'; ?>
</table>
</td>

<td style="width: 242px; height: 22px; vertical-align: top; text-align: left;">
Sample Questions:<br />
<br />
Should CE IT systems be Centralized, Decentralized or Distributed?<br />
<br />
Prioritize the following concepts for CE IT<br />
1 Business Process Improvement through IT<br />
2 Reliability and Availability of CE systems<br />
3 Interoperability of for future systems<br />
4 User Satisfaction with CE IT<br />
.....and more!</td>
</tr>
</table>
<br />
</form>

</body>
</html>
<?php
}
?>

```

Start Survey (PHP)

```
<?php
if(isset($_POST['next']))
{
    // here we start the session and add logic to direct participants based on position
    session_start();
    $errorMessage = '';
    echo 'something is missing; go back and try again';
    if (is_numeric($_POST['execuser']) && is_numeric($_POST['majcom']))
    {
        // check if the user id and password combination is correct
        // position ID 6 is Flight CC, lower numbers are higher positions
        //
        // set the session

        $_SESSION['position'] = $_POST['position'];
        $_SESSION['rank'] = $_POST['rank'];
        $_SESSION['majcom'] = $_POST['majcom'];
        $_SESSION['afsc'] = $_POST['afsc'];
        $_SESSION['positiontime'] = $_POST['positiontime'];
        $_SESSION['execuser'] = $_POST['execuser'];

        if (($_POST['execuser']) > 4 )
        {
            $_SESSION['executive_is_logged_in'] = true;
            $IPAddress = $_SERVER['REMOTE_ADDR'];
            $position = $_SESSION['position'];
            $rank = $_SESSION['rank'];
            $majcom = $_SESSION['majcom'];
            $afsc = $_SESSION['afsc'];
            $positiontime = $_SESSION['positiontime'];
            $execuser = $_SESSION['execuser'];
            /* trouble shooting code
            echo $_POST['radio']."\n";
            echo $_SESSION['position']."\n";
            echo $_SESSION['rank']."\n";
            echo $_SESSION['majcom']."\n";
            echo $_SESSION['afsc']."\n";
            echo $_SERVER['REMOTE_ADDR']."\n";
            */
            // Post results from this form to database when next button pressed
            include 'thesisconfig.php';
            include 'thesisopendb.php';

            // Here is a good place to insert code to get and insert start time.

            if(!get_magic_quotes_gpc())
            {
                $afsc = addslashes($afsc);
            }
            $query = "INSERT INTO execparticipant (IPAddress, majcom, rank, afsc, position,
            positiontime, execuser, datetime_1) values ('$IPAddress', '$majcom', '$rank', '$afsc',
            '$position', '$positiontime', '$execuser', NOW())";
            mysql_query($query);
            $_SESSION['ID'] = mysql_insert_id();
            echo $query;
            //header('Location: executivesurvey.php');
            $location = 'http://'.$_SERVER['SERVER_ADDR'].'/executivesurvey.php';
            echo '<script> location = "'.$location.'";</script>';
            include 'closedb.php';
            exit;
        }
        elseif (($_POST['execuser']) <= 4) {
```

```

$SESSION['user_is_logged_in'] = true;
//header('Location: usersurvey.php');
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/usersurvey.php';
echo '<script> location = "'.$location.'";</script>';
exit;
}
else {
$errorMessage = 'Sorry, no relationship to systems and or majcom selected';
//header('Location: startsurvey.php');
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
echo '<script> location = "'.$location.'";</script>';
exit;
}
}
}
else
{

?>
<!--<link rel="stylesheet" type="text/css" href="http://<?php echo
$_SERVER['REMOTE_ADDR'];?>/style.css" /> -->
<html>
<style type="text/css">
body {
background-image: url(Horizontal1.jpg);
background-repeat: repeat-y;
}
</style>
<head>
<title>Start Survey</title>
<meta http-equiv="content-type" content="text/html; charset=utf-8">
<script language="JavaScript">
/*
This function is called when
the 'next' button is pressed
Output : true if all input are correct, false otherwise
*/
function checkForm()
{

var gafsc, gposition, grank, gmajcom, gpositiontime, gexecuser;
with(window.document.startsurveyform)
{
gafsc= afsc;
gposition= position;
gmajcom= majcom;
grank= rank;
gpositiontime = positiontime;
gexecuser = execuser;
}

// if position is empty alert the visitor
if(grank.value == '')
{
alert('Please select rank');
grank.focus();
return false;
}
else if(gposition.value == '')
{
alert('Please select position');
gposition.focus();
return false;
}
else if(gmajcom.value == '')
{
alert('Please select majcom');

```

```

gmajcom.focus();
return false;
}
else if(gpositiontime.value == '')
{
alert('Please select time in position');
gpositiontime.focus();
return false;
}
else if(gexecuser.value == '')
{
alert('Please select respective role to CE IT systems');
gexecuser.focus();
return false;
}
else if(gafsc.value == '')
{
alert('Please enter <?php echo 'afsc';?> your equivalent or none');
gafsc.focus();
return false;
}
else
{
// when all input are correct
// return true so the form will submit
// alert('this is returning TRUE');
return true;
}
}
</script>
</head>
</body>

<!-- this code does such and such --> <?php
include 'thesisconfig.php';
include 'thesisopendb.php';

// Here we stop php and begin the html code for a 3 by 3 table. Auto height for rows,
// code to generate questions is inserted in the center row and column
// column width is specified, to allow for space from the border colors of
// the background on the left side. For appearance sake.

?>
<form method="post" name="startsurveyform">
<table style="width: 800px; height: 196px">
<tr>
<td style="width: 110px">
</td>
<td style="width: 575px">
<H2> Start Survey </H2>
</td>
<td>
</td>
</tr>
<tr>
<td style="width: 110px">
</td>
<td style="width: 575px">

<?php

// Print the Survey questions with option select list boxes

$query = "SELECT ID, QuestionNum, Question, tableName FROM `initial-questions`";
$result = mysql_query($query) or die('Error, query failed');

while($row = mysql_fetch_array($result))

```

```

{ //start primary loop
$tableName = $row['tableName'];
$phrase = $row['Question'] ;
echo str_replace("SIS", "ACES", $phrase); ?>
<select name="<?php echo $row['tableName']?>" style="width: auto;">
    <option selected="selected"></option>
<?php

$query2 = "SELECT ID, value FROM $tableName";
$result2 = mysql_query($query2) or die('Error, query failed');

while($row2 = mysql_fetch_array($result2))
{ // start secondary loop here the options are populated?>
<option value="<?php echo $row2['ID']?>"><?php echo $row2['value']?></option>
<?php
} //end the secondary loop
mysql_free_result($result2);
?>
<!-- end the select options and add a couple return lines for next question-->
</select>&nbsp;  <br />
<br />
<br />

<?php

} // end the primary loop
mysql_free_result($result);

// Here we also need to add the afsc text entry box, this has two qualities
// by not having a list box people can enter needed data of afsc
// also, by manually entering afsc - outsiders can be weeded out by not selecting well
// although, a long list of afscs could be enough to weed out the outsiders.

echo "Manually enter AFSC or job code: "; ?><input id="Text1" type="text" name="afsc"
/></td> <?php

// and close the database connection

// Below the HTML Table is continued
?>
</td>
    <td style="text-align: center;">
<span>The following systems are available for evaluation</span> <br /> <br />
<?php
$query3 = "SELECT SIS FROM system";
$result3 = mysql_query($query3);
while($row3 = mysql_fetch_array($result3))
{
echo $row3['SIS']; ?>
<br /> <?php
}
mysql_free_result($result3);
?>

    </td>
</tr>
<tr>
    <td style="width: 110px">
    </td>
    <td style="width: 575px">
    </td>
    <td>

```

```
<input name="next" type="submit" id="submit1" value="Next" onClick="return
checkForm();">
    </td>
</tr>
</table>
</form>
<?php
include 'closedb.php';
} // This is to end the else from the if statement at the top of this document
?>
</body>
</html>
```

UserSurvey (PHP) User Selects a System

```
<?php
session_start();
// I have an issue to consider, people could return and change their answers before
ending
if (!isset($_SESSION['user_is_logged_in']) || $_SESSION['user_is_logged_in'] !== true)
{
    // not logged in, move to login page
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else // This else allows for all other actions to happen on the page if user is logged in
{
    include 'thesisconfig.php';
    include 'thesisopendb.php';
    if (isset($_POST['next'])) // check to see if submit next button pushed
    {
        if(isset($_POST['radio'])) // check to see if radio button selected
        {
            $SIS = $_POST['radio'];
            $_SESSION['SIS'] = $SIS;
            $_SESSION['SectionOrder'] = '1'; // This is to begin the increments for user questions
            $position = $_SESSION['position'];
            $rank = $_SESSION['rank'];
            $majcom = $_SESSION['majcom'];
            $afsc = $_SESSION['afsc'];
            $positiontime = $_SESSION['positiontime'];
            $execuser = $_SESSION['execuser'];
            $IPAddress = $_SERVER['REMOTE_ADDR'];
            /* trouble shooting code
            echo $_POST['radio']."\n";
            echo $_SESSION['position']."\n";
            echo $_SESSION['rank']."\n";
            echo $_SESSION['majcom']."\n";
            echo $_SESSION['afsc']."\n";
            echo $_SERVER['REMOTE_ADDR']."\n";
            */
            // Post results from this form to database when next button pressed
            $query = "INSERT INTO responsesuser (SIS, IPAddress, majcom, rank, afsc, position,
            positiontime, execuser) values ('$SIS', '$IPAddress', '$majcom', '$rank', '$afsc',
            '$position', '$positiontime', '$execuser')";
            mysql_query($query);
            $_SESSION['ID'] = mysql_insert_id();
            //mysql_free_result($result);
            //echo $_SESSION['ID']; // Code used for troubleshooting
            include 'closedb.php';
            //header('Location: survey.php');
            $location = 'http://'.$_SERVER['SERVER_ADDR'].'/survey.php';
            echo '<script> location = "'.$location.'";</script>';
            exit;
        }
        else
        {
            echo '_____'. 'please select a system';
        }
    }
}
?>
<html>
<head>
<style type="text/css">
body {
background-image: url(Horizontal1.jpg);
```


User Survey (PHP)

```
<?php
session_start();
$SISid = $_SESSION['SIS'];
// I have an issue to consider, people could return and change their answers before
ending

if (!isset($_SESSION['user_is_logged_in']) || $_SESSION['user_is_logged_in'] != true)
{
    // not logged in, move to login page
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else // This else allows for all other actions to happen on the page if user is logged in
{
    include 'thesisconfig.php';
    include 'thesisopendb.php';
    $SecOrd = $_SESSION['SectionOrder'];
    // Here, if the submit button is pressed, the values of the drop downs will be submitted
    into the record
    if(isset($_POST['next']))
    {
        $Query = "SELECT ID, QuestionNum, Question, category, SectionOrder FROM userquestions
        WHERE SectionOrder = '$SecOrd' ORDER BY QuestionNum ASC";
        $result = mysql_query($Query) or die('Error, query failed');
        $ID = $_SESSION['ID']; // This has to do with the users data key where id = id.

        while($row = mysql_fetch_array($result))
        {
            $select = $row['QuestionNum'];
            $category = $row['category'];
            // If statement is trying to avoid sending a null value to mysql database.
            if(is_numeric($_POST[$row['QuestionNum']]))
            {
                $optionn = $_POST[$row['QuestionNum']];
            }
            else
            {
                // Here if no value is selected for the question, then the value of 99999 is default
                $optionn = '99999';
            }
            $tempValue = $category.'_'.$select;
            $Query2 = "UPDATE responsesuser SET $tempValue = $optionn WHERE ID = $ID";
            mysql_query($Query2) or die('Error, query failed');
        }
        // end while loop

        $Querytime = "UPDATE responsesuser SET datetime_$SecOrd = NOW() WHERE ID = $ID";
        echo $Querytime;
        mysql_query($Querytime);

        mysql_free_result($result);
        include 'closedb.php';
        if($SecOrd <= 8)
        {
            $_SESSION['SectionOrder'] = $SecOrd + 1; // This will increment to the next category of
            questions
            //$_SERVER['PHP_SELF'] Gets the name of the current php file name
            $self = $_SERVER['PHP_SELF'];
            $self = str_replace("/", "", $self);
            //header('Location: survey.php');
        }
    }
}
```

```

$location = 'http://'.$_SERVER['SERVER_ADDR'].'/survey.php';
echo '<script> location = "'.$location.'";</script>';
}

else
{
//header('Location: comments.php'); //Here we move to the comments
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/comments.php';
echo '<script> location = "'.$location.'";</script>';
}
} // end if isset post "next"
else
{
// This little query call is just for inserting the selected system name into the
question
$query = "SELECT SIS from system where ID = '$SISid'";
$result = mysql_query($query) or die('Error, insert query failed');
while($row = mysql_fetch_array($result))
{
$SISname = $row['SIS'];
}
mysql_free_result($result);
// This little query call is for inserting the title of section of questions
$query = "SELECT SectionTitle from userquestions where SectionOrder = '$SecOrd'";
$result = mysql_query($query) or die('Error, insert query failed');
while($row = mysql_fetch_array($result))
{
$SectionTitle = $row['SectionTitle'];
}
mysql_free_result($result);

?>

<html>
<head>
<style type="text/css">
body {
background-image: url(Horizontal1.jpg);
background-repeat: repeat-y;
}
</style>
<!-- <link rel="stylesheet" type="text/css" href="http://<?php echo
$_SERVER['REMOTE_ADDR'];?>/style.css" /> -->
<!-- <style type="text/css"> -->

<title><?php echo $SectionTitle;?></title>

<meta http-equiv="content-type" content="text/html; charset=utf-8">
</head>
</body>
<form method="post">
<table style="width: 850px; height: 196px">
<tr>
<td style="width: 110px">
</td>
<td style="width: 575px">
<H2> <?php echo $SectionTitle;?> </H2>
<p> Please do not use the forward or back navigation buttons for your browser at this
time </p>
</td>
<td>
</td>
</tr>
<tr>
<td style="width: 110px">
</td>
<td style="width: 575px">

```

```

<?php if($SectionTitle == 'Quiz'){echo 'Quiz scores bring innovative comments to the
top';}}?>
<br />
<br />

<?php
// Here we get a list of questions based on sectionOrder
$query = "SELECT ID, QuestionNum, Question, SectionOrder, Qtype FROM userquestions WHERE
SectionOrder = $SecOrd ORDER BY QuestionNum ASC";
$result = mysql_query($query) or die('Error, query failed');

// Print the Survey with option select list boxes

while($row = mysql_fetch_array($result))
{

    $phrase = $row['Question'] ;
    $Qtype = $row['Qtype'];
    ?> <?php echo str_replace("SIS", $SISname, $phrase);
    // This if is to make text boxes for specific questions with $Qtype of 20
    if($Qtype == 20)
    { ?>
        <input name = "<?php echo $row['QuestionNum']?>" id="<?php echo $row['QuestionNum']?>"
        style="font-size: 10pt; width: 60px" type="text" />
        <br />
        <br />
        <?php }
    else
    { ?>
        <select name="<?php echo $row['QuestionNum']?>" style="font-size: 10pt; width: auto">
        <option selected="selected"></option>
        <?php
        $query2 = "SELECT ID, valueQ, Qtype, des FROM optionselect WHERE Qtype = $Qtype";
        $result2 = mysql_query($query2) or die('Error, query failed');
        while($row2 = mysql_fetch_array($result2))
        { ?>
            <option value="<?php echo $row2['ID']?>"><?php echo $row2['des']?></option>
            <?php
        } //start and stop PHP to end the loop
        ?>
        </select>&nbsp;<br />
        <br />
        <br />

        <?php
        mysql_free_result($result2);
        }
        }
        mysql_free_result($result);

    // Below the HTML Table is continued
    ?>
    </td>
        <td style="text-align: center; width: auto; color: gray;">
        <span>....Survey Sections....</span> <br /> <br />
        <?php
        $query3 = "SELECT SectionOrder, SectionTitle, count FROM userquestioncategorycount";
        $result3 = mysql_query($query3);
        while($row3 = mysql_fetch_array($result3))
        {
            ?><p<?php if($row3['SectionOrder'] == $SecOrd){echo ' style="color: black;";}else{echo '
            style="color: gray;";} ?><?php echo $row3['SectionTitle'].' ('.$row3['count'].')';
            ?></p>
            <?php
        }
        mysql_free_result($result3);
    // and close the database connection

```

```
include 'closedb.php';
?>
        </td>
    </tr>
    <tr>
        <td style="width: 110px">
        </td>
        <td style="width: 575px">
        </td>
        <td>
        <input name="next" type="submit" id="addid1" value="Next">
        </td>
    </tr>
</table>
</form>
<?php

}
}
?>
</body>
</html>
```

User Comments (PHP)

```
<?php

session_start();
$SISid = $_SESSION['SIS'];
$ID = $_SESSION['ID'];
// I have an issue to consider, people could return and change their answers before
ending

if (!isset($_SESSION['user_is_logged_in']) || $_SESSION['user_is_logged_in'] !== true)
{

    // not logged in, move to login page
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else // This else allows for all other actions to happen on the page if user is logged in
{
    if(isset($_POST['submit']))
    {
        include 'thesisconfig.php';
        include 'thesisopendb.php';
        $user = $_SESSION['ID'];
        $SIS = $_SESSION['SIS'];
        $querytime = "UPDATE responsesuser SET datetime_10 = NOW() WHERE ID = $user";
        mysql_query($querytime);
        $query = "SELECT ID, comments, SIS, manhours, men, category FROM responsesuserquiztime
        WHERE (SIS = $SIS) & (comments IS NOT NULL) & (prefer IS NULL) & (ID <> $ID)";
        echo $query;
        // $query = "SELECT ID, comments, SIS, manhours, men, category FROM responsesuser WHERE
        ((responsesuser.position >= 6) & (responsesuser.position <= 8)) & (SIS = $SISid) &
        (comments IS NOT NULL) & (prefer IS NULL)";
        $result = mysql_query($query) or die('Error, query failed');
        while($row = mysql_fetch_array($result))
        {
            $users = $row['ID'];
            $comments = $row['comments'];

            if(!get_magic_quotes_gpc())
            {
                $comments = addslashes($comments);
            }
            $manhours = $row['manhours'];
            $men = $row['men'];
            echo 'men = '.$men;
            $category = $row['category'];
            $Sysid = $row['SIS'];

            if(is_numeric($_POST['manhours'].$row['ID']) & is_numeric($_POST['agree'].$row['ID']))
            {
                $manh = $_POST['manhours'].$row['ID'];
                $agree = $_POST['agree'].$row['ID'];

                $query2 = "INSERT INTO comments (SIS, manhours, men, category, FK_user, FK_users,
                manhoursE, agree, comments) VALUES ($Sysid, $manhours, $men, $category, $user, $users,
                $manh, $agree, '$comments')";
                echo $query2;
                $result2 = mysql_query($query2) or die ('Error, query failed');
                if(isset($_POST['radio']))
                {
                    $radio = $_POST['radio'];
                }
            }
        }
    }
}
```

```

$query3 = "UPDATE comments SET prefer = $radio WHERE ((FK_users = $radio) AND (FK_user =
$user))";
$result3 = mysql_query($query3) or die ('Error, query failed');
$query4 = "UPDATE responsesuser SET prefer = $radio WHERE (ID = $user)";
$result4 = mysql_query($query4) or die ('Error, query failed');
}
}
else if(is_numeric($_POST['manhours'].$row['ID']))
{
$manh = $_POST['manhours'].$row['ID'];

$query2 = "INSERT INTO comments (SIS, manhours, men, category, FK_user, FK_users,
manhoursE, comments) VALUES ($SySid, $manhours, $men, $category, $user, $users, $manh,
'$comments')";
echo $query2;
$result2 = mysql_query($query2) or die ('Error, query failed');
if(isset($_POST['radio']))
{
$radio = $_POST['radio'];
$query3 = "UPDATE comments SET prefer = $radio WHERE ((FK_users = $radio) AND (FK_user =
$user))";
$result3 = mysql_query($query3) or die ('Error, query failed');
$query4 = "UPDATE responsesuser SET prefer = $radio WHERE (ID = $user)";
$result4 = mysql_query($query4) or die ('Error, query failed');
}
}
else if(is_numeric($_POST['agree'].$row['ID']))
{
$agree = $_POST['agree'].$row['ID'];
$query2 = "INSERT INTO comments (SIS, manhours, men, category, FK_user, FK_users, agree,
comments) VALUES ($SySid, $manhours, $men, $category, $user, $users, $agree,
'$comments')";
echo $query2;
$result2 = mysql_query($query2) or die ('Error, query failed');
if(isset($_POST['radio']))
{
$radio = $_POST['radio'];
$query3 = "UPDATE comments SET prefer = $radio WHERE ((FK_users = $radio) AND (FK_user =
$user))";
$result3 = mysql_query($query3) or die ('Error, query failed');
$query4 = "UPDATE responsesuser SET prefer = $radio WHERE (ID = $user)";
$result4 = mysql_query($query4) or die ('Error, query failed');
}
}
} // end the while statement for updating these items
mysql_free_result($result);

if (isset($_SESSION['user_is_logged_in'])) {
unset($_SESSION['user_is_logged_in']);
}
include 'closedb.php';
//now that the user is logged out,
//go to login page
//header('Location: logout.htm');
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/logout.htm';
echo '<script> location = "'.$location.'";</script>';

} // end primary if submit
else
{
if(isset($_POST['next']))
{
include 'thesisconfig.php';
include 'thesisopendb.php';

```



```

// Need to add some code to let people know when there are just no comments to view
$num_rows = mysql_num_rows($result);
if($num_rows == '0')
{
    ?><br \> <br \> <br \>
    <p> There are no comments from others at this time for this system who are in your
    position </p> <br />
    <p> You may return to see comments at a later time </p> <br />
    <p> To do so please return to http://misevaluation.org/review </p> <br />
    <p> Your ID is: <?php echo $ID;?></p> <br />
    <p> Your password will be: EARLYBIRD </p> <br />
    <?php
    }
    else
    {
        while($row = mysql_fetch_array($result))
        {
            // change all HTML special characters,
            // to prevent some nasty code injection
            $comments = $row['comments'];
            $comments = htmlspecialchars($comments);

            // convert newline characters ( \n OR \r OR both ) to HTML break tag ( <br> )
            $comments = nl2br($comments);

            ?><table style="width: 630px; height: 1px;" border="1" bordercolor="#000000"
            cellpadding="1" cellspacing="1">
                <tr>
                    <td rowspan="3" valign="middle">
                        <!-- <textarea name="comment2" id="TextArea2" style="width: max; height:
                        auto"></textarea> -->
                        <?php echo $comments;?></td>
                    <td style="width: 67px; height: 30px;" valign="middle">
                        <span style="font-size: 10pt">Man hours this would save your
            shop per month</span></td>
                    <td style="width: 100px; height: 30px;" valign="middle">
                        <input name="manhours<?php echo $row['ID'];?>" id="Text1"
            style="width: 74px" type="text" /></td>
                </tr>
                <tr>
                    <td style="width: 67px; height: 30px">
                        <span style="font-size: 10pt">Agreement with this
            comment</span></td>
                    <td style="height: 30px; width: 100px;">
                        <select name="agree<?php echo $row['ID'];?>" id="agree"
            style="width: auto">
                        <option selected="selected"></option>
                        <?php
                        // this will provide the comment agree style select options
                        $query = "SELECT ID, Qtype, des FROM optionselect WHERE Qtype = 1";
                        $result2 = mysql_query($query);
                        while($row2 = mysql_fetch_array($result2)) //populate the options for category drop-down
                        { ?>
                        <option value="<?php echo $row2['ID'];?>"><?php echo $row2['des'];?></option>
                        <?php } // end the while statement
                        mysql_free_result($result2);?>
                        </select>
                    </td>
                </tr>
                <tr>
                    <td style="height: 30px; width: 67px;">
                        <span style="font-size: 10pt">Same but better than my
            comment</span></td>
                    <td style="height: 30px; width: 100px;">
                        <input name="radio" value="<?php echo $row['ID'];?>"
            id="Radio1" type="radio" unselectable="off" atomicselection="true" contenteditable="true"
            />Yes (choose one or none)</td>
                </tr>
            </table>

```

```

        </table>

<?php } // end the while statement that populates the comments of others
} // end the else statement for populating comments so long as $num_rows != 0
mysql_free_result($result);
?></td>

    </tr>
    <tr>
        <td style="width: 105px">
        </td>
        <td style="width: 200px;">
        </td>
        <td style="text-align: center;">
        </td>
        <td>
        </td>
    </tr>
</table>
</form>
</body>
</html>
<?php
}
else
{
?>
<!--<link rel="stylesheet" type="text/css" href="http://<?php echo
$_SERVER['REMOTE_ADDR'];?>/style.css" /> -->
<html>

<script language="JavaScript">
/*
This function is called when
the 'next' button is pressed
Output : true if all input are correct, false otherwise
*/
function checkForm()
{

var gcomment, gmanhours, gmen, gcategory, numericExpression, test;
with(window.document.commentstable)
{
gcomment= comments;
gmanhours= manhours;
gmen= men;
gcategory= category;
numericExpression = /[+-]?[0-9]*\.[0-9]+/;
test = "012346789.";
}

// if comment is empty alert the visitor
if(gcomment.value == '')
{
alert('Please enter your comment or close browser');
gcomment.focus();
return false;
}
else if(gmanhours.value == '')
{
alert('Please enter estimated number of man hours that would be saved in your shop by
your comment or select skip comments');
gmanhours.focus();
return false;
}
else if(gmen.value == '')
{

```



```

        (hours)<br />
        <span style="font-size: 10pt">How many people in your shop would be
affected by your
        idea
        &nbsp;<input name="men" style="width: 60px" type="text" />
        (persons)<br />
        Please try to categorize your comment by one of these&nbsp;<br />
        <select name="category" style="width: auto">
<option selected="selected"></option>
<?php
$query = "SELECT ID, value FROM category";
$result = mysql_query($query);
while($row = mysql_fetch_array($result)) //populate the options for category drop-down
{
    <?php echo $row['ID']?><?php echo $row['value']?></option>
<?php } // end the while statement
mysql_free_result($result);?>
        </select>
        <br />
    </span>

    <span style="font-size: 10pt">
        <br />
        Please consider providing your e-mail address to aid in the
reliability of this study:&nbsp;<br />
        Unless you request otherwise; E-mail addresses will be purged from
the survey results
        prior to Apr 08. Additionally, no e-mail addresses will be provided
to any third party<br />
        <br />
        E-mail address (prefer .mil)&nbsp;<br />
    </span>
    <input name="email" style="font-size: 10pt; width: 244px" type="text"
/><br />
    <span style="font-size: 10pt">Are you willing to be contacted by AFIT research students
    about your comments</span>
    <input name="link" id="Checkbox1" type="checkbox" />(yes)<br />
    <span style="font-size: 10pt">Do you wish to recieve an e-mail link to
the survey and
    study results?</span><input name="recieve" id="Checkbox2"
type="checkbox" /><br />
    <!--<input id="Submit1" style="font-size: 10pt" type="submit"
value="submit" onClick="return checkForm();"-->
    <input name="next" type="submit" id="submit1" value="Next" onClick="return
checkForm();">
</td>

    <td style="width: 261px" valign="top">
        <table style="width: 320px; height: 20px;" border="1"
bordercolor="#000000" cellpadding="1" cellspacing="1">
            <tr>
                <td rowspan="3" style="width: 187px">
<textarea name="comment2" id="TextArea2" style="width: 181px; height: 142px"></textarea>
                </td>
                <td style="width: 96px; height: 34px;">
                    <span style="font-size: 10pt">Man Hours this would save
you</span></td>
                <td style="width: 54px; height: 34px;">
                    <input name="manhours2" id="Text1" style="width: 49px"
type="text" /></td>
            </tr>
            <tr>
                <td style="width: 96px; height: 21px">
                    <span style="font-size: 10pt">Do you agree with this
comment</span></td>
                <td style="height: 21px; width: 54px;">
                    <select name="agree" id="agree" style="width: auto">

```

```

<option selected="selected"></option>
<?php
// this will provide likert1 style select options
$query = "SELECT ID, value, Qtype, des FROM optionselect WHERE Qtype = 15";
$result = mysql_query($query);
while($row = mysql_fetch_array($result)) //populate the options for category drop-down
{
    <option value="<?php echo $row['ID']?>"><?php echo $row['des']?></option>
    <?php } // end the while statement
    mysql_free_result($result);?>
    </select>
    </tr>
    <tr>
        <td style="width: 96px; height: 34px;">
            <span style="font-size: 10pt">Prefer this over
yours</span></td>
        <td style="width: 54px; height: 34px;">
            <input name="radio" value="php row id value" id="Radio1"
type="radio" />yes</td>
    </tr>
</table>
</td>
</tr>
<tr>
    <td style="width: 273px">
    </td>
    <td style="width: 500px; text-align: center;">
    </td>
    <td style="width: 261px">
    </td>
</tr>
</table>
</form>

</body>
</html>

</body>
</html>
<?php
include 'closedb.php';
} // end else for initial posting of comments
} // end else for submission of reviews of other comments
} // end the else for the session begin if statement
?>

```

Manager Survey Select Systems (PHP)

```
<?php
session_start();

// I have an issue to consider, people could return and change their answers before
ending

if (!isset($_SESSION['executive_is_logged_in']) || $_SESSION['executive_is_logged_in']
!= true)
{

    // not logged in, move to login page
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else // This else allows for all other actions to happen on the page if user is logged in
{
    include 'thesisconfig.php';
    include 'thesisopendb.php';
    $ID = $_SESSION['ID'];
    // once next is pressed we want to see what was selected by the executive user and make a
    row for each systems evaluation
    if (isset($_POST['next'])) // check to see if submit next button pushed
    {
        $query = "SELECT ID, SISOrder, SIS, Description FROM system ORDER BY SISOrder ASC";
        $result = mysql_query($query) or die('Error mysql query failed');
        $i = 0;
        while($row = mysql_fetch_array($result))
        {
            // here we populate the responsesexec table with rows for each systems selected for
            evaluation
            if($_POST[$row['ID']] > 0) // check to see if System is selected
            {
                $SIS = $row['ID'];
                $query2 = "INSERT INTO responsesexec (manager, SISid) VALUES ('$ID', '$SIS')";
                //echo $query2;
                mysql_query($query2) or die('Error mysql query failed');
                $i++;
            }
            echo $i;
        }
    } //end the while loop
    // this if statement checks to see if there were any systems selected during the while
    loop
    mysql_free_result($result);
    if($i == 0)
    {
        echo '_____'. 'please select a system';
        //include 'closedb.php';

        //exit;
    }
    else
    {
        include 'closedb.php';
        $_SESSION['SectionOrder'] = '1';
        //header('Location: esurvey.php');
        $location = 'http://'.$_SERVER['SERVER_ADDR'].'/esurvey.php';
        echo '<script> location = "'.$location.'";</script>';
        exit;
    }
}
```



```
<input name="next" type="submit" id="submit1" value="Next" onClick="">
    </td>
    <td>
    </td>
</tr>
</table>

</body>
</html>
<?php
} // end the else for the session
?>
```

Manager Survey

```
<?php
session_start();
// I have an issue to consider, people could return and change their answers before
ending

if (!isset($_SESSION['executive_is_logged_in']) || $_SESSION['executive_is_logged_in']
!= true)
{

    // not logged in, move to login page
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else // This else allows for all other actions to happen on the page if user is logged in
{
    include 'thesisconfig.php';
    include 'thesisopendb.php';
    $SecOrd = $_SESSION['SectionOrder'];
    // Here, if the submit button is pressed, the values of the drop downs will be submitted
    into the record
    if(isset($_POST['next']))
    {
        $Qtype = $_SESSION['Qtype'];
        if($_SESSION['Qtype'] >= 25)
        {
            $ID = $_SESSION['ID']; // This has to do with the users data key where id = id.
            $query0 = "SELECT execparticipant.ID, responsesexec.manager, responsesexec.SISid,
            system.SIS
            FROM (execparticipant LEFT JOIN responsesexec ON execparticipant.ID =
            responsesexec.manager) LEFT JOIN system ON responsesexec.SISid = system.ID
            WHERE (((execparticipant.ID)= $ID))";
            $result0 = mysql_query($query0) or die('Error, query failed');
            while($row0 = mysql_fetch_array($result0))
            {
                $SISid = $row0['SISid'];
                $query1 = "SELECT ID, QuestionNum, Question, category, SectionOrder FROM execquestions
                WHERE SectionOrder = '$SecOrd' ORDER BY QuestionNum ASC";
                $result1 = mysql_query($query1) or die('Error, query failed');

                while($row1 = mysql_fetch_array($result1))
                {
                    $SectionOrder = $row1['SectionOrder'];
                    $select = $row1['QuestionNum'];
                    $category = $row1['category'];
                    // If statement is trying to avoid sending a null value to mysql database.
                    if(is_numeric($_POST[$SISid.$row1['QuestionNum']]))
                    {
                        $optionn = $_POST[$SISid.$row1['QuestionNum']];
                    }
                    else
                    {
                        // Here if no value is selected for the question, then the value of 99999 is default
                        $optionn = '99999';
                    }
                    $tempValue = $category.'_'.$select;

                    $query2 = "UPDATE responsesexec SET $tempValue = $optionn WHERE (manager = $ID) & (SISid
                    = $SISid)";
                    echo $query2;
                    mysql_query($query2) or die('Error, query failed');
                } // end while loop result 1
            }
        }
    }
}
```

```

mysql_free_result($result1);
} // end while loop result 0
mysql_free_result($result0);
} // if statement of if Qtype = 25
else if($_SESSION['Qtype'] == 12)
{
    $query = "SELECT ID, QuestionNum, Question, category, SectionOrder FROM execquestions
    WHERE SectionOrder = '$SecOrd' ORDER BY QuestionNum ASC";
    $result = mysql_query($query) or die('Error, query failed');
    $query2 = "SELECT ID, valueQ, Qtype, des FROM optionselect WHERE Qtype = $Qtype";
    $result2 = mysql_query($query2) or die('Error, query failed');
    $ID = $_SESSION['ID']; // This has to do with the users data key where id = id.

    while($row = mysql_fetch_array($result))
    {
        while($row2 = mysql_fetch_array($result2))
        {
            $select = $row['QuestionNum'].'_'.$row2['valueQ'];

            $category = $row['category'];
            // If statement is trying to avoid sending a null value to mysql database.
            if(is_numeric($_POST[$row['QuestionNum'].'_'.$row2['ID']]))
            {
                $optionn = $_POST[$row['QuestionNum'].'_'.$row2['ID']];
            }
            else
            {
                // Here if no value is selected for the question, then the value of 99999 is default
                $optionn = '99999';
            }
            $tempValue = $category.'_'.$select;
            $query2 = "UPDATE execparticipant SET $tempValue = $optionn WHERE ID = $ID";
            mysql_query($query2) or die('Error, query failed');
        } // end inner while loop
    } // end while loop
    mysql_free_result($result);
}
else
{
    $query = "SELECT ID, QuestionNum, Question, category, SectionOrder FROM execquestions
    WHERE SectionOrder = '$SecOrd' ORDER BY QuestionNum ASC";
    $result = mysql_query($query) or die('Error, query failed');
    $ID = $_SESSION['ID']; // This has to do with the users data key where id = id.

    while($row = mysql_fetch_array($result))
    {
        $select = $row['QuestionNum'];
        $category = $row['category'];
        // If statement is trying to avoid sending a null value to mysql database.
        if(is_numeric($_POST[$row['QuestionNum']]))
        {
            $optionn = $_POST[$row['QuestionNum']];
        }
        else
        {
            // Here if no value is selected for the question, then the value of 99999 is default
            $optionn = '99999';
        }
        $tempValue = $category.'_'.$select;
        $query2 = "UPDATE execparticipant SET $tempValue = $optionn WHERE ID = $ID";
        mysql_query($query2) or die('Error, query failed');
    } // end while loop
    mysql_free_result($result);
} // end if SESSION Qtype is 25

if($SecOrd == 17)

```

```

{
$query2 = "UPDATE execparticipant SET datetime_8 = NOW() WHERE ID = $ID";
mysql_query($query2) or die('Error, query failed');
}
if($SecOrd == 18)
{
$query2 = "UPDATE execparticipant SET datetime_9 = NOW() WHERE ID = $ID";
mysql_query($query2) or die('Error, query failed');
}
include 'closedb.php';

if($SecOrd < 18)
{
$_SESSION['SectionOrder'] = $SecOrd + 1; // This will increment to the next category of
questions
//header('Location: esurvey.php');
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/esurvey.php';
echo '<script> location = "'.$location.'";</script>';
}
else
{
//header('Location: ecomments.php'); //Let's go make some comments
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/ecomments.php';
echo '<script> location = "'.$location.'";</script>';
exit;
}

} // end if isset post "next"
else
{
// This little query call is just for inserting the selected system name into the
question (not needed for exec survey)
// $query = "SELECT SIS from system where ID = '$SISid'";
// $result = mysql_query($query) or die('Error, insert query failed');
// while($row = mysql_fetch_array($result))
// {
// $SISname = $row['SIS'];
// }
// mysql_free_result($result);
// This little query call is for inserting the title of section of questions
$query = "SELECT SectionTitle from execquestions where SectionOrder = '$SecOrd'";
$result = mysql_query($query) or die('Error, insert query failed');
while($row = mysql_fetch_array($result))
{
$SectionTitle = $row['SectionTitle'];
}
mysql_free_result($result);

echo $SecOrd;
?>

<html>
<head>
<style type="text/css">
body {
background-image: url(Horizontal1.jpg);
background-repeat: repeat-y;
}
</style>

<!-- <link rel="stylesheet" type="text/css" href="http://<?php echo
$_SERVER['REMOTE_ADDR'];?>/style.css" /> -->
<!-- <style type="text/css"> -->

<title><?php echo $SectionTitle;?></title>
<meta http-equiv="content-type" content="text/html; charset=utf-8">
</head>

```

```

</body>
<form method="post">
<table style="width: 800px; height: 196px">
    <tr>
        <td style="width: 110px">
            </td>
        <td style="width: 575px">
<H2> <?php echo $$SectionTitle;?> </H2>
<p>Please do not use the forward or back navigation buttons for your browser during this
survey</p>
<br />
<?php if($$SectionTitle == 'Quiz'){echo 'Quiz scores bring innovative comments to the
top';}?>
            </td>
        <td>
            </td>
        </tr>
    <tr>
        <td style="width: 110px">
            </td>
        <td style="width: 575px">
<?php
// Here we need to begin the loop to cycle through the same question for each system
// Here we get a list of questions based on sectionOrder

$query1 = "SELECT ID, QuestionNum, Question, SectionOrder, Qtype FROM execquestions WHERE
SectionOrder = $$SecOrd ORDER BY QuestionNum ASC";
$result1 = mysql_query($query1) or die('Error, query failed');

// This will cycle through executive question list
while($row1 = mysql_fetch_array($result1))
{
    $Qtype = $row1['Qtype'];
    $_SESSION['Qtype'] = $Qtype; // use this when writing results to see if it was type 25 to
    use a while loop
    // This if is to make text boxes for specific questions with $Qtype of 20
    if($Qtype == 20)
    {
        $query = "SELECT SIS from system where ID = '$SISid'";
        $result = mysql_query($query) or die('Error, insert query failed');
        while($row = mysql_fetch_array($result))
        {
            $SISname = $row['SIS'];
        }
        $phrase = $row1['Question'] ;
        $Qtype = $row1['Qtype'];
        echo str_replace("SIS", $SISname, $phrase);
    }
    ?>
    <input name = "<?php echo $SISid.$row1['QuestionNum'];?>" id="<?php echo
    $row1['QuestionNum'];?>" style="font-size: 10pt; width: 60px" type="text" />
    <br />
    <br />
    <?php
    //If question type is not 25 then we don't want to cycle through the questions
    } // was if Qtype = 20
    else if($Qtype >= 25) //This is for the same question for each system selected
    {
        $ID = $_SESSION['ID'];
        $query0 = "SELECT execparticipant.ID, responsesexec.manager, responsesexec.SISid,
        system.SIS
        FROM (execparticipant LEFT JOIN responsesexec ON execparticipant.ID =
        responsesexec.manager) LEFT JOIN system ON responsesexec.SISid = system.ID
        WHERE (((execparticipant.ID)= $ID))";
        $result0 = mysql_query($query0) or die('Error, query failed');
        while($row0 = mysql_fetch_array($result0))
        {
            // These next few lines go and get the
            $SISname = $row0['SIS'];

```

```

$SISid = $row0['SISid'];
$phrase = $row1['Question'];
echo str_replace("SIS", $SISname, $phrase);
?> <br />

<select name="<?php echo $SISid.$row1['QuestionNum']?>" style="font-size: 10pt; width:
auto">
<option selected="selected"></option>
<?php
$query2 = "SELECT ID, valueQ, Qtype, des FROM optionselect WHERE Qtype = $Qtype";
$result2 = mysql_query($query2) or die('Error, query failed');
while($row2 = mysql_fetch_array($result2))
{
?>
<option value="<?php echo $row2['ID']?>"><?php echo $row2['des']?></option>
<?php
} //start and stop PHP to end the loop
?>
</select>&nbsp;<br />
<br />
<br />
<?php
mysql_free_result($result2);
}
mysql_free_result($result0);
} // was else if($Qtype >= 25)
else if($Qtype == 12)
{
$phrase = $row1['Question'];
echo $phrase;
$query2 = "SELECT ID, valueQ, Qtype, des FROM optionselect WHERE Qtype = $Qtype";
$result2 = mysql_query($query2) or die('Error, query failed');
while($row2 = mysql_fetch_array($result2))
{
?>
<br />
<?php echo '#'.$row2['valueQ'].' ' ;?>
<select name="<?php echo $row1['QuestionNum'].'_'.$row2['ID']?>" style="font-size: 10pt;
width: auto">
<option selected="selected"></option>
<?php
$query4 = "SELECT ID, valueQ, Qtype, des FROM optionselect WHERE Qtype = $Qtype";
$result4 = mysql_query($query4) or die('Error, query failed');
while($row4 = mysql_fetch_array($result4))
{
?>
<option value="<?php echo $row4['ID']?>"><?php echo $row4['des']?></option>
<?php
} //start and stop PHP to end the loop
mysql_free_result($result4);
?>
</select>&nbsp;<br />
<br />
<?php
}
mysql_free_result($result2);
//mysql_free_result($result0); //If question type is not 25 then we don't want to cycle
through the questions
//if($Qtype < 7 OR $Qtype > 11){break;} // free_result worked but it had error messages,
this works better
}
else
{
// $query3 = "SELECT ID, QuestionNum, Question, SectionOrder, Qtype FROM execquestions
WHERE SectionOrder = $SecOrd ORDER BY QuestionNum ASC";
// $result3 = mysql_query($query3) or die('Error, query failed');

// This will cycle through executive question list
// while($row3 = mysql_fetch_array($result3))
// {

```

```

$phrase = $row1['Question'];
echo $phrase.' ';

?>
<select name="<?php echo $row1['QuestionNum']?>" style="font-size: 10pt; width: auto">
<option selected="selected"></option>
<?php
$query2 = "SELECT ID, valueQ, Qtype, des FROM optionselect WHERE Qtype = $Qtype";
$result2 = mysql_query($query2) or die('Error, query failed');
while($row2 = mysql_fetch_array($result2))
{
?>
<option value="<?php echo $row2['ID']?>"><?php echo $row2['des']?></option>
<?php
} //start and stop PHP to end the loop
mysql_free_result($result2);
?>
</select>&nbsp;<br />
<br />
<br />
<?php
//} // end the loop for populating multiple questions
//mysql_free_result($result3);
} // end the else statement for Qtype functions

} // End loop for cycling through the executive user questions table
mysql_free_result($result1);
// and close the database connection
// Below the HTML Table is continued
?>
</td>
  |
```


Manager Comments (PHP)

```
<?php

session_start();

$ID = $_SESSION['ID'];
// I have an issue to consider, people could return and change their answers before
ending

if (!isset($_SESSION['executive_is_logged_in']) || $_SESSION['executive_is_logged_in']
    !== true)
{
    // not logged in, move to login page
    //header('Location: startsurvey.php');
    $location = 'http://'.$_SERVER['SERVER_ADDR'].'/startsurvey.php';
    echo '<script> location = "'.$location.'";</script>';
    exit;
}
else // This else allows for all other actions to happen on the page if user is logged in
{
    if(isset($_POST['submit']))
    {
        $systemchoiceid = $_SESSION['systemchoice'];
        include 'thesisconfig.php';
        include 'thesisopendb.php';

        $user = $_SESSION['ID'];

        $querytime = "UPDATE execparticipant SET datetime_10 = NOW() WHERE ID = $user";
        mysql_query($querytime);
        // This query here needs to match the query in the tables below that populates the
        comments of others for review
        $query = "SELECT ID, comments, systemchoice, category, men, manhours FROM
        execparticipantquiztime WHERE (systemchoice IS NOT NULL) & (comments IS NOT NULL) &
        (prefer IS NULL) & (ID <> $user)";
        $result = mysql_query($query) or die('Error, query failed');
        while($row = mysql_fetch_array($result))
        {
            $users = $row['ID'];
            $comments = $row['comments'];

            if(!get_magic_quotes_gpc())
            {
                $comments = addslashes($comments);
            }
            $manhours = $row['manhours'];
            $men = $row['men'];
            $category = $row['category'];
            $Sysid = $row['systemchoice'];

            if(is_numeric($_POST['manhours'].$row['ID']) & is_numeric($_POST['agree'].$row['ID']))
            {
                $manh = $_POST['manhours'].$row['ID'];
                $agree = $_POST['agree'].$row['ID'];
                $query2 = "INSERT INTO ecomments (systemchoice, manhours, men, category, FK_user,
                FK_users, manhoursE, agree, comments) VALUES ($Sysid, $manhours, $men, $category, $user,
                $users, $manh, $agree, '$comments')";
                $result2 = mysql_query($query2) or die ('Error, query failed');
                if(isset($_POST['radio']))
                {
                    $radio = $_POST['radio'];
                    $query3 = "UPDATE ecomments SET prefer = $radio WHERE ((FK_users = $radio) AND (FK_user =
                    $user))";
                    $result3 = mysql_query($query3) or die ('Error, query failed');
```

```

$query4 = "UPDATE execparticipant SET prefer = $radio WHERE (ID = $user)";
$result4 = mysql_query($query4) or die ('Error, query failed');
}
}
else if(is_numeric($_POST['manhours'].$row['ID']))
{
$manh = $_POST['manhours'].$row['ID'];

$query2 = "INSERT INTO ecomments (systemchoice, manhours, men, category, FK_user,
FK_users, manhoursE, comments) VALUES ($SySid, $manhours, $men, $category, $user, $users,
$manh, '$comments')";
$result2 = mysql_query($query2) or die ('Error, query failed');
if(isset($_POST['radio']))
{
$radio = $_POST['radio'];
$query3 = "UPDATE ecomments SET prefer = $radio WHERE ((FK_users = $radio) AND (FK_user =
$user))";
$result3 = mysql_query($query3) or die ('Error, query failed');
$query4 = "UPDATE execparticipant SET prefer = $radio WHERE (ID = $user)";
$result4 = mysql_query($query4) or die ('Error, query failed');
}
}
else if(is_numeric($_POST['agree'].$row['ID']))
{
$agree = $_POST['agree'].$row['ID'];
$query2 = "INSERT INTO ecomments (systemchoice, manhours, men, category, FK_user,
FK_users, agree, comments) VALUES ($SySid, $manhours, $men, $category, $user, $users,
$agree, '$comments')";
echo $query2;
$result2 = mysql_query($query2) or die ('Error, query failed');
if(isset($_POST['radio']))
{
$radio = $_POST['radio'];
$query3 = "UPDATE ecomments SET prefer = $radio WHERE ((FK_users = $radio) AND (FK_user =
$user))";
$result3 = mysql_query($query3) or die ('Error, query failed');
$query4 = "UPDATE execparticipant SET prefer = $radio WHERE (ID = $user)";
$result4 = mysql_query($query4) or die ('Error, query failed');
}
}
} // end the while statement for updating these items
mysql_free_result($result);
if (isset($_SESSION['executive_is_logged_in'])) {
unset($_SESSION['executive_is_logged_in']);
}

// now that the user is logged out,
// go to login page
//header('Location: logout.htm');
$location = 'http://'.$_SERVER['SERVER_ADDR'].'/logout.htm';
echo '<script> location = "'.$location.'";</script>';
} // end primary if submit
else
{
//if(isset($_POST['SISfilter'])) // This is the filter the user can select what comments
to see
//{
//$SISfilter = $_POST['SISfilter'];
//}
//else
//{
//$SISfilter = '%';
//}
if(isset($_POST['next']))
{
include 'thesisconfig.php';
include 'thesisopendb.php';
}
}

```



```

        comment, and if similar enough, do you prefer their expression over your
        own.</td>
<td style="height: Auto;" valign="top">
<input name="submit" type="submit" id="submit2" value="Submit" language="javascript"
onclick="return submit2_onclick()" style="width: 47px; height: 55px" >
</td>
</tr>
<tr>
<td style="width: 105px; height: 546px;" valign="top">
</td>
<td style="width: 200px; height: 546px; color: gray;" valign="top">
<span><?php echo $comments?></span><br /><br />
<!--<textarea name="comments" style="width: 336px; height: 113px"></textarea><br />-->
<span style="font-size: 10pt; color: gray;">How many man hours would this
save in your shop&nbsp;per month&nbsp;per month&nbsp;
</span>
<input value="<?php echo $manhours;?>" name="manhours" style="font-size:
10pt; width: 60px; background-color: transparent;" type="text" /><span
style="font-size: 10pt; color: gray;"> (hours)<br />
</span>
<br />
<span style="font-size: 10pt; color: gray;">How many people in your shop would be
affected by your idea &nbsp;&nbsp;&nbsp;
<input value="<?php echo $men;?>" name="men" style="width: 60px;
background-color: transparent;" type="text" />
(persons)<br />
<br />
Please try to categorize your comment by one of these&nbsp;
<br />
<?php
// This query is show the category that the user previously selected
$query = "SELECT ID, value FROM category WHERE ID = $category";
$result = mysql_query($query)or die('Error, query failed');
while($row = mysql_fetch_array($result)) //populate the options for category drop-down
{ ?><input value="<?php echo $row['value']?>" id="input3" style="width: auto; background-
color: transparent;" />
<?php
} // end the while statement
mysql_free_result($result); ?><br /> <br />
</span>

<span style="font-size: 10pt; color: gray;">Please consider providing your e-mail address
to aid in the reliablty of this study:&nbsp; Unless specified
otherwise, E-mail
addresses will be purged from the survey results prior to Apr 08, and
will not be provided to any third party<br />
<br />
E-mail address (prefer .mil)</span><input value="<?php echo
$email;?>" name="email" style="font-size: 10pt; width: 150px; background-color:
transparent;" type="text" /><br />
<span style="font-size: 10pt; color: gray;">I'm willing to be identifiable to further
explain my comments</span>
<input checked="<?php echo $link;?>" name="link" id="Checkbox1" type="checkbox"
style="background-color: transparent" />yes<br />
<!--<input name="next" type="submit" id="submit1" value="Next" onClick="return
checkForm();"-->
<span style="font-size: 10pt">Do you wish to recieve an e-mail link to
the survey and
study results?</span> <input checked="<?php echo $recieve;?>"
name="recieve" id="Checkbox2" type="checkbox" />
yes
</td>

<td style="height: 546px;" valign="top">
<!-- Here begins the loop to populate the comments of others -->

```

```
<!-- Lets try and see if we can add some filtering functionality to this page for comment
filtering -->
```

```
<?php
$query = "SELECT ID, comments, systemchoice FROM execparticipantquiztime WHERE
(systemchoice IS NOT NULL) & (comments IS NOT NULL) & (prefer IS NULL) & (ID <> $ID)";
$result = mysql_query($query) or die('Error, query failed');
// Need to add some code to let people know when there are just no comments to view
$num_rows = mysql_num_rows($result);
if($num_rows == '0')
{
    ?><br \> <br \> <br \>
    <p> There are no other comments concerning this system at this time </p> <br />
    <p> You may return to see comments at a later time </p> <br />
    <p> To do so please return to http://misevaluation.org/executivereview </p> <br />
    <p> Your ID is: <?php echo $ID;?></p> <br />
    <p> Your password will be: earlybird </p> <br />
    <?php
    }
    else
    {
        while($row = mysql_fetch_array($result))
        {
            $systemchoice2 = $row['systemchoice'];
            $query6 = "SELECT des, ID FROM optionselect WHERE ID = $systemchoice2";
            $result6 = mysql_query($query6) or die('Error, query failed');
            while($row6 = mysql_fetch_array($result6))
            {
                $systemchoice2 = $row6['des'];
            }
            mysql_free_result($result6);
            // change all HTML special characters,
            // to prevent some nasty code injection
            $comments = $row['comments'];
            $comments = htmlspecialchars($comments);

            // convert newline characters ( \n OR \r OR both ) to HTML break tag ( <br> )
            $comments = nl2br($comments);

            ?>
            <table style="width: 630px; height: 1px;" border="1" bordercolor="#000000"
            cellpadding="1" cellspacing="1">
                <tr>
                    <td rowspan="4" valign="middle">
                        <!-- <textarea name="comment2" id="TextArea2" style="width: max; height:
                        auto"></textarea> -->
                        <?php echo $comments;?></td>
                    <td style="width: 67px; height: 30px;" valign="middle">
                        <span style="font-size: 10pt">Man hours this would save your
                        section per month</span></td>
                    <td style="width: 100px; height: 30px;" valign="middle">
                        <input name="manhours"<?php echo $row['ID'];?>" id="Text1"
                        style="width: 74px" type="text" /></td>
                    <td style="width: 67px; height: 30px">
                        <span style="font-size: 10pt">Agreement with this
                        comment</span></td>
                    <td style="height: 30px; width: 100px;">
                        <select name="agree"<?php echo $row['ID'];?>" id="agree"
                        style="width: auto">
                        <option selected="selected"></option>
```

```

<?php
// this will provide the comment agree style select options
$query = "SELECT ID, Qtype, des FROM optionselect WHERE Qtype = 1";
$result2 = mysql_query($query);
while($row2 = mysql_fetch_array($result2)) //populate the options for category drop-down
{
    <?php
    <option value="<?php echo $row2['ID'];?>"><?php echo $row2['des'];?></option>
    <?php
    } // end the while statement
    mysql_free_result($result2);?>
</select>
</tr>
<tr>
<td style="height: 30px; width: 67px;">
<span style="font-size: 10pt">Same but better than my comment</span></td>
<td style="height: 30px; width: 100px;">
<input name="radio" value="<?php echo $row['ID'];?>" id="Radio1" type="radio"
unselectable="off" atomicselection="true" contenteditable="true" />Yes (choose one or
none)</td>
</tr>
<tr>
<td style="height: 30px; width: 67px;">
<span style="font-size: 10pt">system</span></td>
<td style="height: 30px; width: 67px;">
<span style="font-size: 10pt"><?php echo $systemchoice2; ?></span></td>
</tr>
</table>
<br />
<?php
} // end the while statement that populates the comments of others
} // end the else statement for populating comments so long as $num_rows != 0
mysql_free_result($result);
?></td>

</tr>
<tr>
<td style="width: 105px">
</td>
<td style="width: 200px;">
</td>
<td style="text-align: center;">
</td>
<td>
</td>
</tr>
</table>
</form>
</body>
</html>
<?php
}
else
{
    ?>
<!--<link rel="stylesheet" type="text/css" href="http://<?php echo
$_SERVER['REMOTE_ADDR'];?>/style.css" /> -->
<html>
<script language="JavaScript">
/*
This function is called when
the 'next' button is pressed
Output : true if all input are correct, false otherwise
*/
function checkForm()
{

```

```

var gcomment, gmanhours, gmen, gcategory, gsystemchoice, numericExpression, test;
with(window.document.commentstable)
{
gcomment= comments;
gsystemchoice = systemchoice;
gmanhours= manhours;
gmen= men;
gcategory= category;
numericExpression = /[+-]?[0-9]*\.[0-9]+/;
test = "012346789.";
}

// if comment is empty alert the visitor
if(gcomment.value == '')
{
alert('Please enter your comment or close browser');
gcomment.focus();
return false;
}
else if(gmanhours.value == '')
{
alert('Please enter estimated number of man hours that would be saved in your shop by
your comment or select skip comments');
gmanhours.focus();
return false;
}
else if(gmen.value == '')
{
alert('Please select how many personnel in your section would benifit from your idea');
gmen.focus();
return false;
}
else if(gcategory.value == '')
{
alert('Please select the category which represents the primary point of your comment');
gcategory.focus();
return false;
}
else if(gsystemchoice.value == '')
{
alert('Please select the system to which your comment applies or select general');
gsystemchoice.focus();
return false;
}
else if(! gmanhours.value.match(numericExpression))
{
alert('please enter numeric values only');
gmanhours.focus();
return false;
}
else if(! gmen.value.match(numericExpression))
{
alert('please enter numeric values only');
gmen.focus();
return false;
}
}
</script>
<head>
<style type="text/css">
body {
background-image: url(Horizontal1.jpg);
background-repeat: repeat-y;
}
</style>
</head>

```



```

        </span>
<span style="font-size: 10pt">
    <br />
    Please consider providing your e-mail address to aid in the
reliability of this study:&nbsp;  
    Unless you request otherwise; E-mail addresses will be purged from
the survey results
    prior to Apr 08. Additionally, no e-mail addresses will be provided
to any third party<br />
    <br />
    E-mail address (prefer .mil)&nbsp;  
</span>
<input name="email" style="font-size: 10pt; width: 244px" type="text"
/><br />
<span style="font-size: 10pt">Are you willing to be contacted by AFIT research students
    about your comments</span>
    <input name="link" id="Checkbox1" type="checkbox" /><br />
    <span style="font-size: 10pt">Do you wish to recieve an e-mail link to
the survey and
    study results?</span><input name="recieve" id="Checkbox2"
type="checkbox" /><br />
    <!--<input id="Submit1" style="font-size: 10pt" type="submit"
value="submit" onClick="return checkForm();"-->
<input name="next" type="submit" id="submit1" value="Next" onClick="return
checkForm();">
</td>

    <td style="width: 261px" valign="top">
        <table style="width: 320px; height: 20px;" border="1"
bordercolor="#000000" cellpadding="1" cellspacing="1">
            <tr>
                <td rowspan="3" style="width: 187px">
<textarea name="comment2" id="TextArea2" style="width: 181px; height: 142px"></textarea>
                </td>
                <td style="width: 96px; height: 34px;">
                    <span style="font-size: 10pt">Man Hours this would save
you</span></td>
                <td style="width: 54px; height: 34px;">
                    <input name="manhours2" id="Text1" style="width: 49px"
type="text" /></td>
            </tr>
            <tr>
                <td style="width: 96px; height: 21px">
                    <span style="font-size: 10pt">Do you agree with this
comment</span></td>
                <td style="height: 21px; width: 54px;">
                    <select name="agree" id="agree" style="width: auto">
<option selected="selected"></option>
<?php
// this will provide likert1 style select options
$query = "SELECT ID, value, Qtype, des FROM optionselect WHERE Qtype = 15";
$result = mysql_query($query);
while($row = mysql_fetch_array($result)) //populate the options for category drop-down
{
    <?>
    <option value="<?php echo $row['ID']?>"><?php echo $row['des']?></option>
    <?php } // end the while statement
    mysql_free_result($result);?>
                </select>
            </tr>
            <tr>
                <td style="width: 96px; height: 34px;">
                    <span style="font-size: 10pt">Prefer this over
yours</span></td>
                <td style="width: 54px; height: 34px;">

```

```

                                <input name="radio" value="php row id value" id="Radio1"
type="radio" />yes</td>
                                </tr>
                                </table>
                                </td>

</tr>
<tr>
    <td style="width: 273px">
    </td>
    <td style="width: 500px; text-align: center;">
    </td>
    <td style="width: 261px">
    </td>
</tr>
</table>
</form>

</body>
</html>

</body>
</html>
<?php
include 'closedb.php';
} // end else for initial posting of comments
} // end else for submission of reviews of other comments
} // end the else for the session begin if statement
?>

```

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14. ABSTRACT The Air Force Civil Engineer Support Agency (AFCEA) has developed information systems in support of civil engineer operations. Over the last decade the number of systems has grown to support the breadth of civil engineer functions. At this time numerous (900+) decentralized systems support Civil Engineer functions around the world. Due to budget constraints the Air Force Civil Engineer is transforming Civil Engineer business processes to leverage the workforce in an optimized fashion. In support of this transition AFCEA is posturing to acquire new information systems in support of Civil Engineer business processes. To help AFCEA improve upon their suite of information systems development efforts it is important to evaluate the effectiveness of their current systems. This study develops a model based on cumulative research to assess information system effectiveness. Adapting instruments developed to measure information system effectiveness this study evaluates ten systems developed for the Civil Engineer community. Predictors of information system effectiveness are System Quality, Information Quality, and Service Quality. When comparing systems this study indicates that one system, (GeoBase,) is significantly greater in all areas of information system effectiveness. It is recommended that future systems development be fashioned after GeoBase due to comparison of system results.					
15. SUBJECT TERMS Management Information Systems, Evaluation, Success Model, Information Systems, Information Quality, System Quality, Service Quality, Information System Effectiveness, User Satisfaction, Civil Engineer, ACES, Automated Civil Engineer Systems, Air Force Civil Engineer, GeoBase, IWIMS, Interim Work Management System, AFTR, ACES-PM, ACES-PR, ACES-FD, ACES-HM, ACES-HF, ACES-FM, ACES-RP, Benchmark.					
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