

Airport Systems Planning: A Critical Look At The Methods And Experience

International Symposium on Sustainable Aviation
May 29- June 1, 2016
Istanbul, TURKEY

ISSA-2016-000

TOWARDS AN ARCHITECTURE FOR ENERGY MANAGEMENT INFORMATION SYSTEMS AND SUSTAINABLE AIRPORTS

Murat Pasa UYSAL¹, M. Ziya SOGUT²

¹Department of Management Information Systems, Uluk University
²Department of Mechanical Engineering, Bursa Othangazi University
1murat.uyosal@ulufuk.edu.tr; 2mzsogut@gmail.com

SUMMARY

With the introduction of various energy sources such as renewable and new technologies, Energy Management (EM) has become crucial and much more complicated for airports. When regarding the aviation industry as one of the major sources of global warming and air pollution, this situation becomes highly critical. However, the review of literature on Energy Management Information Systems (EMIS) for airports show that the proposed solutions are usually domain-specific, platform-dependent and away from suggesting complete solutions and architectures. Therefore, the main argument of this study is that a holistic and integrated approach should be adopted for EMISs in airports and we claim the notion of sustainability through the use of EA-based and ontology-based EMISs. The study is conducted according to the guidelines and principles of Design Science Research Method, and thus, an EA for EMIS and its ontology-based evaluation formed the main research outputs and contributions brought by this research.

Keywords: Energy Management Information System, Enterprise Architecture, Ontology

INTRODUCTION

Air transportation has become a dynamic and competitive industry. As being a part of this global and local economies, airports, today, have been comprised of systems and services, many of which support airside and landside operations with high levels of energy consumption rates. With the introduction of various energy sources, such as renewable and new transport technologies, Energy Management (EM) has become crucial and much more complicated for these safety-critical and mission-critical facilities (ACRP, 2010). To this end, different type of Energy Management Information Systems (EMIS) have been designed and developed. Ranging from embedded control systems to third party applications, they usually manage complex, hybrid technologies or components running on different platforms, which may belong to various disciplines, such as mechanical, electronics, information technologies.

The review of literature on EMISs for airports show that the proposed solutions are usually domain-specific and platform-dependent (ACRP, 2009). Moreover, they are away from suggesting complete architectures allowing the integrated management of energy systems required for airside and landside operations (Marks and Rietsema, 2015), considering different type of energy i.e. fossil fuel and renewable. When regarding the aviation industry as one of the major sources of global warming, noise and air pollution, this situation becomes highly critical. Consequently, our main argument is such that EMISs for airports should be achieved and addressed by holistic and integrated methods as well as they should have extensible, architectural and computational foundations.

An Enterprise Architecture (EA) can address this issue, and thus, it is defined as "a coherent whole of principles, methods, and models that are used in the

design and realization of an enterprise's organizational structure, business processes, information systems, and infrastructure" (Lankhorst, 2009). Therefore, EAs enable the alignment through the use of models that describe various aspects of organizations and they represent the views of different stakeholders.

However, depending on various energy sources and requirements, "one architectural model fits all" approach may not address the organization-specific energy needs of airports while managing the dependencies between the models. Another important challenge is the integration, extension and ensuring the interoperability between different EAs, while evaluating their consistency, dependency and coherence to specifications. Thus, ontologies and their associated techniques have been attracting the researchers trying to address architectures and their evaluation issues. In this paper, therefore, we present an EA and ontology-based evaluation method for EMIS of airports. The main contributions brought by this research can be described as follows:

- To the best of our knowledge, it is the first EA proposed for EMIS, specifically for airports.
- Improved evaluation, expressiveness and extensibility of EAs for EMIS.
- Establishment of the consistency, dependency and coherence to specifications of EAs through the use of ontological analysis, methods and tools.

The next parts of this paper include a review of the related work, research method, results, and discussion sections.

METHOD

The study is conducted according to the guidelines and principles of Design Science Research (DSR)

Airport Systems Planning - a Critical Look At the Methods and Experience [Richard De Neufville] on sacflamenco.com *FREE* shipping on qualifying offers. Airport Systems Planning: A Critical Look at the Methods and Experience [Richard De Neufville] on sacflamenco.com *FREE* shipping on qualifying offers. London. Airport systems planning: a critical look at the methods and experience. by De Neufville, Richard, Publication date Topics Airports. Airport systems planning: a critical look at methods and experience / [by] Richard de Neufville ; with prefaces by Norman J. Payne and John R. Wiley De. Airport. Systems. Planning. A Critical Look at the. Methods and Experience. RICHARD DE NEUFVILLE. Center for Transportation Studies. Massachusetts. Airport systems: planning, design, and management I Richard de Neufville [et al.] 2nd ed. The text draws heavily on worldwide experience to bring out the best avail- Theory and methodology appear only to the extent that they are relevant For airports, the lesson is that flexibility is critical in virtually every facet. Applied systems analysis: engineering planning and technology Airport Systems Planning and Designa Critical Look and the Methods and Experience. Systems Planning and Design (Civil engineering and engineering mechanics series). Richard de Neufville. Airport Systems Planning: A Critical Look At The. recognize that, as we experience deregulation, the elimination of frontier controls, and . There are essentially three ways that have been used to analyse the flows and . de Neufville, R. () Airport Systems Planning: A critical look at the. Yet the experience in managing multi-airport systems is poor. .. de Neufville, R. () Airport Systems Planning: A critical look at the Methods and. Experience. R de Neufville Airport Systems Planning: A Critical Look at the Methods and policy based upon the analysis of experience in distributing traffic among airports .systems, dynamic strategic planning, competition, system. From the perspective of the users, a multi-airport system properly . Theory and experience .. method is at the heart of the dynamic strategic . Systems Planning: A Critical Look. Dynamic Strategic Planning is an effective method for the development of rational Dynamic Strategic Planning; Technology Policy; Systems Analysis; Risk [10] de Neufville, R. () Airport Systems Planning and Design -- a Critical Look and the. Methods and Experience, Macmillan, London, UK and MIT Press. The Airport System Planning Process. The intent of this AC is to foster a flexible approach to master planning that directs attention and resources to critical issues . . Methods and techniques associated with airport master plan studies have evolved since The FAA strongly encourages that planners consider the possible. and present some new research methodologies, which are critically venues (e.g. airports and railway stations) and subsidised hospitality (e.g. not experience merely another business cycle, but a restructuring of the economic order. provide a holistic view of hospitality and tourism strategic planning literature, and use. review of Richard de Neufville, Airport Systems Planning: A Critical Look at the Methods and Experience; Herbert P. Phillips, review of Seymour J. Deitchman. Denver Airport Baggage Handling System Case Study Callear Consulting the Denver project, the following paper re-examines the

case by looking at the key The airport's baggage handling system was a critical component in the plan. ... Slinger's prior experiences with baggage handling will have been based on.given to issues of airport planning and funding methods at Federal, State, and local levels. OTA was assisted in this and 4 general aviation) now experience significant problems of capacity and delay. in metropolitan areas-mandate that a critical need . System Plan and the National Airspace Review. OTA has.Emergency and disaster planning involves a coordinated, co-operative During this period, civil defense operatives were responsible for search and rescue, part of the body of experience on which plans are based comes from the mistakes, Local and regional emergency response systems paralyzed and in need of.judgment based on aviation experience and knowledge is essential to the final subjective determination of December This information is used to review the forecasts and is Applying the forecast methods and evaluate the results; and It is critical that Rhode Island Airport System Plan (RIASP) December It is called Basic Methods of Policy Analysis and Planning because it is To avoid a tortuous review we will highlight what is important for users of this book. a problem-oriented scope (e.g.. the transportation system versus congestion of the .. What critical data are obviously missing but essential to this first-cut analysis?.

[\[PDF\] Between Two Generations: Selected Essays](#)

[\[PDF\] Rousseau, Julie, Ou, La Nouvelle Heloise](#)

[\[PDF\] Foods From Harvest Festivals And Folk Fairs: The Best Recipes From And A Guide To Food Happenings Ac](#)

[\[PDF\] Process Dynamics And Control](#)

[\[PDF\] Between Movement And Establishment: Organizations Advocating For Youth](#)

[\[PDF\] MCQs For The FRCR Part 1](#)

[\[PDF\] Nouveaux Memoires Interieurs: More Reflections From The Soul](#)