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Preface

The purpose of the 10th ACIS International Conference on Software Engineering Research, Management and Applications (SERA 2012) held on May 30-June 1, 2012 in Shanghai, China was to bring together researchers and scientist, engineers, computer users, students to share their experiences and exchange new ideas, and research results about all aspects (theory, applications and tools) of software engineering, and to discuss the practical challenges encountered along the way and the solutions adopted to solve them. The conference organizers selected the best 14 papers from those papers accepted for presentation at the conference in order to publish them in this volume. The papers were chosen based on review scores submitted by members of the program committee, and underwent further rigorous rounds of review.

In Chapter 1, Economic globalization and Information Technology development have intensified the competition among modern enterprises, independent of the trade and sector in which they develop. In this intense battle, the customer relationship has arisen as an important resource for establishing a competitive position against the rest of competitors. Customer Relationship Management (CRM), particularly, is a new technology, strategy and idea that provides overall guidelines and support for business in the construction, maintenance and management of customer relationships. However, CRM implementation into Mexican Small and Medium Enterprises (SMEs), is, until now, a field under continuous exploration which mainly generates recommendations about success and failure factors. However, there is evidence about the success of CRM in developing countries that enables countries to establish a comparative basis. This paper provides an exploratory study about CRM experiences in developing countries' SMEs, and presents a framework which implements the minimal requirements identified for this kind of enterprises in Mexico.

In Chapter 2, View the explosion of data volume and high circulating on the web (satellite data, genomic data ...) the classification of the data (data mining technique) is required. The clustering was performed by a method based bio (social spiders) because there is currently no method of learning that can almost directly represent unstructured data (text). Thus, to make a good data classification must be a good representation of the data. The representation of these data is performed by a vector

whose components are derived from the overall weight of the corpus used (TF-IDF). A language-independent method was used to represent text documents is that of n-grams characters and words. Several similarity measures have been tested. To validate the classification we used a measure of assessment based on recall and precision (f-measure).

In Chapter 3, Over the years, software has become ubiquitous in business processes from payroll systems to airline reservation systems. Software plays a vital role in facilitating business processes. Given the importance of these software systems, managing their quality is essential to the success of the business processes they support. Because quality attributes are important predictors of software quality as to provide a better understanding of the related features acquired for each software quality attribute, those features can be manipulated to improve the quality of a software project and determine the desired functional requirements necessary to satisfy the associated business processes. Accordingly, customer needs should be completely elicited in developing the software application then traced and referred back to throughout the software development process during the early requirements analysis phase. The proposed questionnaire empowers software developers to capture the functional reliability requirements and specify reliability related features for a software system.

In Chapter 4, Design patterns are good design solutions to recurring problems.

Many works were interested in design patterns identification either for reverse engineering purposes, or for design improvement purposes. All existing approaches considered that a pattern is detected through both its structure and behavior, but no one considers the semantic aspect conveyed by the class and method names. In this paper, we propose a technique that exploits the semantic aspect to identify occurrences of a pattern in a design. In addition to the structural and behavioral analyses, the semantic analysis is very useful, specifically when there is a doubt between two design patterns having similar structures. By resolving a non deterministic identification, the identification precision increases.

In Chapter 5, Organizational knowledge contributes to the requirements necessary for effective Enterprise Architecture (EA) design. The effectiveness of EA processes depend on the quality of both functional and non-functional requirements elicited during the EA design process. Existing EA frameworks consider EA design solely from a techno-centric perspective focusing on the interaction of business goals, strategies, and technology. However, many enterprises fail to achieve the business goals established for the EA because of miscommunication of stakeholder requirements. Though modeling functional and non-functional design requirements from a technical perspective better ensures delivery of EA, a more complete approach would take into account human behavior as a vital factor in EA design. The contribution of this paper is an EA design guideline based on human behavior and socio-communicative aspects of stakeholders and the enterprise using socio-oriented approaches to EA design and modeling.

In Chapter 6, Managing reconfigurable Distributed Real-time Embedded (DRE) systems is a tedious task due to the substantially increasing complexity of these systems and the difficulty to preserve their real-time aspect. In order to resolve this increasing complexity, we propose to develop a new middleware, called RCES4RTES (Reconfigurable Computing Execution Support for Real-Time Embedded Systems), allowing the dynamic reconfiguration of component-based DRE systems. This middleware provides a set of functions ensuring dynamic reconfiguration as well as monitoring and coherence of such systems using a small memory footprint and respecting real-time constraints.

In Chapter 7, Feature Modeling (FM) is an essential activity for capturing commonality and variability in software product lines. Most of today's FM tools are graphical and represent feature models as feature diagrams (FDs). Though FDs are intuitive at first sight, they generally lack of expressiveness and vague in syntax. To overcome these problems, some textual languages are proposed with a richer expressiveness and formal semantics. But are these languages superior than existing modeling approach as they stated, e.g., XML-based one, which is standard based and has vast of acceptance of application other than FM. In this paper, we elaborate the XML-based textual feature modeling approach, evaluate it from multi perspectives, and compare it with another representative textual FM language —TVL, a recently published language. We demonstrate the advantages and disadvantages of the XML-based approach, and argue that the XML-based approach is still the most available and pragmatic approach for adoption in industry though it has some clear limitations which can be fed to more advanced tool support.

In Chapter 8, The utility of a smart-phone application depends not only on its functionality but also on its key non-functional requirements (NFRs), such as ubiquity, safety and usability. Omissions or commissions of considerations of such NFRs could lead to undesirable consequences, such as lack of user safety and difficulty in using smart-phone features. Currently, however, there is little systematic methodology for dealing with NFRs for a smart-phone application, in consideration of the particular characteristics of smart-phones, such as limited screen-size and battery-life, and the availability of a variety of embedded sensors and input/output devices. In this paper, we propose a goal-oriented approach in which NFRs are treated as softgoals, and then used in exploring, and selecting among, alternative means for satisficing them. In this approach, both synergistic and antagonistic interactions among the softgoals are identified and analyzed, considering the particular characteristics of smart-phones. As a proof of concept, a fall detection and response feature of a smart-phone application is presented, along with a safety scenario.

In Chapter 9, Distributed objects usually refer to software modules that are designed to work together, but reside either in multiple computers connected via a network or in different processes inside the same computer. One object sends a message to another object in a remote machine or process to perform some task. Distributed objects are a potentially powerful tool that has only become broadly available for developers at large in the past few years. The power of distributing objects is not in the fact that a bunch of objects are scattered across the network. This paper presents an environment for supporting distributed application using shared object in Java

within a heterogeneous environment for mobile applications. In particular, it offers a set of objects such as Lists, Queues, Stacks that can be shared across a network of heterogeneous machine in the same way as DSM systems. Shared is achieved without recourse to Java RMI or object proxies as in other object systems. An implementation of the environment MBO(Mobile Business Objects) is provided together with performance timings.

In Chapter 10, In recent years, with the growth of software engineering, agile software development methodologies have also grown substantially, replacing plan-driven approaches in many areas. Although prominent agile methodologies are in wide use today, there is no method which is suitable for all situations. It has therefore become essential to apply Situational Method Engineering (SME) approaches to produce agile methodologies that are tailored to fit specific software development situations. Since SME is a complex process, and there is a vast pool of techniques, practices, activities, and processes available for composing agile methodologies, tool support—in the form of Computer Aided Method Engineering (CAME) environments has become essential. Despite the importance of tool support for developing agile methodologies, available CAME environments do not fully support all the steps of method construction, and the need remains for a comprehensive environment. The Eclipse Process Framework Composer (EPFC) is an open-source situational method engineering tool platform, which provides an extensible platform for assembly-based method engineering in Eclipse. EPFC is fully extensible through provision of facilities for adding new method plug-ins, method packages, and libraries. The authors propose a plug-in for EPFC which enables method engineers to construct agile methodologies through an assembly-based SME approach. The plug-in provides facilities for the specification of the characteristics of a given project, selection of suitable agile process components from the method repository, and the final assembly of the selected method chunks, while providing a set of guidelines throughout the assembly process.

In Chapter 11, Business Intelligence (BI) is a set of tools, technologies and process in order to transform data into information and information to required knowledge for improve decision making in organization. Nowadays, we can confidently claim that the use of business intelligence solutions can increase the competitiveness of organization and outstanding it from other organization. This solution enables organization to use available information to exploit the competitive advantages of being a leader and have a better understanding of customer needs and demands to allow better communication with them. In this paper we explain about principals and elements of BI in first section and in second section we discuss about the application of BI in banking industry and consider Saman Bank of Iran as a case study in order to applying BI solution.

In Chapter 12, Component-based development traditionally recognizes two parallel views (system-level view and component-level view), which correspond to two major concerns – development of an application and development of a reusable component for the use in application development. By having different objectives, these views have relatively disparate notion of a component, which consequently means that they are difficult (yet necessary) to combine. In this paper, we propose a

method (named CoDIT), which spans the gap between the two views by providing a synchronisation between system-level view (expressed in UML 2) and component-level view. For component-level view, the method supports component frameworks with method-call as the communication style. The variability in the composition mechanisms of the component frameworks is addressed by using principles of metacomponent systems. The benefits of the proposed method are evaluated on a real-life case study (in SOFA 2) together with measurements of development efforts.

In Chapter 13, Cloud resource architecture is put forward based on servers according to the characteristics of Cloud Computing. And then the trust degree for the resource scheduling in Cloud Computing is defined and a resource scheduling algorithm based on trust degree is presented. Finally, the functional characteristics of this scheduling algorithm are analyzed by simulation, and the simulation results show that the resource scheduling algorithm based on trust degree in Cloud computing possesses the better stability and low risk on completing tasks.

In Chapter 14, We present a location recognition system for an entertainment robot and propose an idea to design a sensor network space. The sensor space consists of CDS (Cadmium sulfide) sensor cell of 24 by 24. Also our implemented hardware system is tested for setting a reference value. It is important to have exact location recognition. The algorithm for acquiring the reference value is proposed and its performance is evaluated with data of the implemented hardware system.

It is our sincere hope that this volume provides stimulation and inspiration, and that it will be used as a foundation for works yet to come.

May 2012

Roger Lee

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