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CONTENTS

The Institution of Engineering and Technology is not, as a body, responsible for the opinions expressed by individual authors or speakers.

A Model-Driven Development Method for Automotive Electronic Applications 1
Zhigang Gao, Zhaohui Wu

Distance and Approaching Angle Estimation of Obstacles for Trajectory Control of Fish Robots 4
Seung Y Na, Daejung Shin, Jin Y Kim, Bae-Ho Lee

An Implementation of Sentential the Korean Sign Language Recognizer for the Next-Generation PC 7
Jung-Hyun Kim, Kwang-Seok Hong

Implementation of RSA Cryptosystem in Embedded Systems 10
Cheng-Khoon Lim, Siew-Theng Toh, Bok-Min Goi

Secure Proof-of-Visit for Extremely Limited Provers in Wireless Sensor Networks 13
Yuen-Yan Chan

RFID-Based RTLS Embedded System for Loading Productivity Improvement in Port Logistics 16
Doo-Jin Park, Young-Bok Choi, Hyun Kim, Ki-Chan Nam

Coordination Strategies for Hierarchical Missile Defense System 19
Piotr Arabas, Krzysztof Malinowsk

Direct Model Checking Statecharts 22
Junyan Qian

One Application Case of Artificial Life Approach in The Simulation of Surface Ship's Anti-Submarine Warfare 25
Rui Guo, Xiaozhe Zhao, Jiayang Yu

Complexity Science and Research on Military Systems 28
Rui Guo, Xiaozhe Zhao

Research on The Simulation of Sea Combat Based on Genetic Algorithm 31
Rui Guo, Xiaozhe Zhao, Jiayang Yu

Visualisation of Molecular and Quantum Dynamics using Web3D and Haptics 34
Andrew Davies, Nigel John, John MacDonald, Keith Hughes

A Black Hole in the Living Room 37
Werner Benger, Brad Corso, Erin Gillilan, Manuel Tiglio

A Meaningful Learning using OCTA 40
Seong Baeg Kim, Kyeungsun Kim, Cheol Min Kim

Template-based Approach to Edutainment 43
Cheol Min Kim, Hye Sun Kim, Seong Baeg Kim

A Robust Watermarking System Based on Rotated Discrete Wavelet Transformation and Locating Method 46
Ching-Te Wang, Tung-Shou Chen, Chiu-Hsiung Liao, Li-Ming Lin

Dynamic-Mask RS Method for Detection of LSB Steganography 49
Xiangyang Luo, Fenlin Liu

Performance of Java versus C++ in a Real-Time Computer Graphics Applications 52
Oscar Belmonte Fernández, Sergio Sancho Chust

Local Z-Buffering Rendering in Densely Occluded Scenes 55
Xiaoxu Han, Mike Zeiger

B-Spline Fitting of Non-Grid Data for Object Recognition 58
Yi Song, Li Bai

Using Category Theory to Model the Dependencies of the Web Services 61
Jiang Guo, Yuehong Liao, Raj Pamula

Software Engineering Approach to Reusable System-on-Chip (SoC) Development 64
Soo Ho Chang, Soo Dong Kim

Web Service Composition and Selection Satisfying Quality of Service Goals 67
Wookey Lee, Daerae Cho, Suk-Ho Kang

Context-Role Based Access Control for Intelligent Space 70
Seon-Ho Park, Jung-Ho Eom, Young-Ju Han, Tai-Myoung Chung

Enhanced Approaches of Security Engineering for Secure Mobile RFID Environments 73
Namje Park, Jooyoung Lee, Howon Kim

Challenging Issues in Large Block Flash Memory 76
Tae-Sun Chung, Dong-Joo Park, Myungho Lee, Yeonseung Ryu

Secure Storage using the Java Cards Grid 79
Serge Chaumette, Achraf Karray, Damien Sauveron

Localizing Sensor Nodes Deployed within Non-Convex Area 81
Oh-Heum Kwon, Ha-Joo Song

Bypass-Zone Based Fast Handover Scheme Over All IP-Based Wireless Systems 84
Sung Ho Kim, Sunshin An

Development of an Interactive System for Postural Control Evaluation and Training 87
Yong-Jun Piao, Yong-Yook Kim, Mi Yu, Tae-Kyu Kwon, Chul-Un Hong, Nam-Gyun Kim

A Hybrid Approach to Defend Against Spam 90
Javaria Naushahi, Minkoo Kim

Heuristic Scheduling Algorithms for Uniform Load of Computer System 93
Wladyslaw Szczesniak

Invariant Features for Automatic Image Mosaicing using Image Scale Space 97
Mohamed El Sonni, Hatem Sultan

Wavelet Analysis of the Forced Van Der Pol Equation 107
Carlo Cattani, Ivan Bochocchio

CFD and it's Contribution in Mineral Separation 110
Mofakharul Islam, Stephen Hall, Hanif Siddique

Hash-based Pseudonymity for Ubiquitous Devices 113
Dirk Henrici, Joachim Götze, Paul Müller

Pattern Recognition in Web Images using High-level Text Features 116
Soosun Cho, Ryum-Duck Oh, Sang-Moon Lee

Triangular Geometrical Graph and the Application for Classification of Viruses' Genomes 119
Wenming Cao, Lijun Ding, Shoujue Wang

Bit Parallel Circuits for Arithmetic Operations in Composite Fields GF(2^{mn}) 125
A A Burtsev, I B Gashkov , S B Gashkov, R A Khokhlov

Recursive Enumeration of Subtrees for Measuring Structural Similarities 128
Jin-Mao Wei, Shu-Qin Wang, Jing Wang, Peng Yin, Guo-Ying Wang

Computational Grid-based ART1 Classification for Bioinformatics Applications 131
Kyu Cheol Cho, Da Hye Park, Jong Sik Lee

CMUR-Tree: Main Memory-Based R-Tree for Supporting Frequent Updates 134
Soon-Young Park, Sang Hun Eo, Gyung-Bae Kim, Hae-Young Bae

A Minimal Feature Reduction Using Rough Sets Theory and Genetic Algorithm for Intrusion Detection 137
Wai-Tak Wong, Yu-Cheng Chang, Cheng-Yang Lai

Robust Visual Feedback Control of Robot Manipulators with Uncertain Dynamics 140
Min Seok Jie, Kang Woong Lee

An Efficient Iris-based Recognizer 143
Hunny Mehrotra, Ajita Rattani, Phalguni Gupta

Semantic Matchmaking Service Model for the Intelligent Web Services 146
Okkyung Choi, Sangyong Han, Ajith Abraham

Control of Information Appliances Using Instant Messaging 149
Seong-Joon Lee, Won-Tae Kim, Tae-Jin Yun, Kwang-Seon Ahn

Comparison Research of Wavelet Neural Networks Algorithms 152
Tao Cheng, Hanxu Sun, Qingxuan Jia, Jingzhou Song

Design and Implementation of NMS for QoS-guaranteed Services in MPLS Network 155
Hyunsub Jung, Yongsik Kwon, Soonyong Song, Sungsuk Yoon, Yeooak Yoon, Seokhun Kim

Eliminating the Spatial Information Flow 158
Young-Hwan Oh, Warnill Chung, Hae-Young Bae

FPGA Based Protocol Anomaly and Pattern Matching Detection System 161
Dong-Ho Kang, Byoung-Koo Kim, Jin-Tae Oh

WESM-ASP: A Web-based Enterprise Security Manager as an ASP Solution 164
Yoonsun Lim, Myung Kim

Performance on the Blue Gene Architecture 167
Alan Gray, Lorna Smith, Joachim Hein, Mark Bull, Fiona Reid, Arthur Trew

A Intrusion Detection System on Dynamic Detection Environment 170
Fang-Yie Leu, Ming-Chang Li, Jia-Chun Lin, Chao-Tung Yang

Building a Maturity Security Model Based on ISO 17799 173
Luís Enrique Sánchez, Daniel Villafranca, Eduardo Fernández-Medina, Mario Piattini

Component Based Color Correlogram for Image Retrieval 176
Muhammad Bilal Ahmed, Jong-An Park

Using Body Parts Energy in Medical Image Retrieval 179
Jong-An Park

WAP 2.0-based Content Conversion System for Mobile Devices 182
Jeong-Hee Kim, Ho-Young Kwak, Han-il Kim

Regional Photon Clustering for Updating Time-Dependent Global Illumination in Dynamic Scenes 183
Bin-Shyan Jong, Juin-Ling Tseng, Wen-Hao Yang, Tsong-Wuu Lin

Verification of Trace-Back Algorithm Against Internet Attacks Using Network Simulator 184
Dong-il Seo, Hwan-Kuk Kim, Yang-Seo Choi

Hybrid Approach for Production-Distribution Scheduling using GA and Simulation 185
Suk Jae Jeong, Seok Jin Lim, Kyung Sup Kim

Economic Analysis of Power Plant Utilities Including Environmental Cost in Korea 196
Suk Jae Jeong, Kyung Sup Kim

Edge-based Compression for 3D Models Using Adaptive Arithmetic Coder 207
Bin-Shyan Jong, Wen-Hao Yang, Juin-Ling Tseng, Tsong-Wuu Lin

RDB Schema Model Considering Storage-space and Searching Efficiency to Storing XML 208
Hoon Kwon, In-Seok Kang, Jeong-Hee Kim, Ho-Young Kwak

A Study on High-Speed Implementation of LILI-II Stream Cipher 209
HoonJae Lee, HyungRak Kim

NetLab – Independent Web-based Learning Tool for Organic Chemistry 210
Nina Aremo, Antti Hoikkala, Tuija Jokela, Sampo Karkola, Annamaria Lilienkampf, Kristiina Wähälä

On-line Pre-paid Authorization for IPv6 Mobility 211
HyunGon Kim

Campus Network Traffic Monitoring 212
Kyung-Jin Lee, Seung-Beom Kim, Wang-Cheol Song, Min-Jae Kang

Improvement of a Combined WAP Proxy for WAP 1.0 and WAP 2.0 Systems 213
KeeHyun Park

Development of ThinkSync-DM Manager for a Wireless Mobile Device Management 214
Hong-Taek Ju, KeeHyun Park

SK-VM based Avatar Email Phone Service System 215
Jung-Yun Lee, Kyung-Jin Lee, Wang-Cheol Song, Min-Jae Kang

Content-Based Image Retrieval using Adaptive Histogram 216
Gi-Hyoung Yoo, Jung-Man Park, Se-Young Jang, Xu-Yan, Kang-Soo You, Hoon-Sung Kwak

Tackling Courses in the Presence of a Broad Spectrum 217
Kyoung Mi Yang, Seong Baeg Kim

Enhancing Numerical Control Programming Techniques using CAM Software 218
Tariq Masood, Iqbal Khan

Modelling Nonlinear Wave Propagation 219
Carlo Cattani, Luis Manuel Sánchez Ruiz, Francesco Villecco

Building a Maturity Security Model Based on ISO 17799

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Abstract. For enterprises to be able to properly use information and communications technologies, it is necessary to have guides, metrics and tools that allow us to always know the level of our security and the points in which we are not covering it. In small and medium-size enterprises, the application of security standards has an additional problem, that is, the fact that they do not have enough resources to perform an appropriate management. In this paper, we will present a new approach to manage security within this kind of enterprises, adapted to the size of the enterprise and its maturity level, using as a reference ISO/IEC 17799. This approach is being directly applied to real cases and it is obtaining a constant improvement in its application.

1 Introduction

In this paper, we will present an approximation to the implementation of security management systems, based on ISO/IEC 17799 that we are developing and continuously improving thanks to the feedback directly received from SICAMAN customers.

Our paper continues with Section 2, we will introduce the management systems implementation scheme including the news we are applying, at the methodological and software levels. Finally, in section 3, we will put forward our conclusions and future work.

2 Security Management Implementation Scheme

The most efficient model considered by SICAMAN customers has been that one based on the creation of improvement cycles through the spiral model. This model facilitates the realization of fast and cheap cycles that allow us to create a culture of security within the organization in a constant and progressive way.

By using this model, we can estimate the maturity level of the enterprise in a minimal period of time and identify the most suitable rules to it, planning short-term realistic milestones of the evolution that the enterprise hopes to reach in each cycle of the spiral. This model is based on three levels of protection that we will apply according to both the maturity level and the size of the enterprise. Thus, an enterprise considered small, according to the parameters of employees and turnover should only apply the version of ISO17799-1, 100 rules to be compulsory fulfilled (see Fig. 1). The other two versions of the rule (300 and 500 rules) would mean over-dimension the security of the enterprise.

Maturity level (According pre-audit performed about ISO17799)		**Enterprise Type (according to number of employees and turnover)**			
Security Evaluation	**Maturity Level**		**Small**	**Medium**	**Big**
		Employees	0 – 25	25 – 250	>250
		Million €	0 – 1	1 – 100	>100
0 - 30%	Low		ISO17799-1 [100]	ISO17799-1 [100]	ISO17799-1 [100]
30% - 70%	Medium		ISO17799-1 [100]	ISO17799-2 [300]	ISO17799-2 [300]
70 - 100%	High		ISO17799-1 [100]	ISO17799-2 [300]	ISO17799-3 [500]

Fig. 1. Models proposed according to the type of enterprise and its maturity level

One of the main and most valuable conclusions obtained from the feedback of SICAMAN customers in which these models have been analyzed is the following one: The over-dimensioning of the security level of an enterprise with respect to its size finishes generating a degradation of the over-dimensioned controls until they reach their natural balance. The final consequence of this fact is that the enterprise invests more resources than the strictly necessary ones that will not provide any value. We are currently developing other models that include new factors that can have influence at the time of deciding about the level of fulfillment that must be applied: the type of activity of the enterprise, the dependency on departments (such as Research and Development Department), and so on.

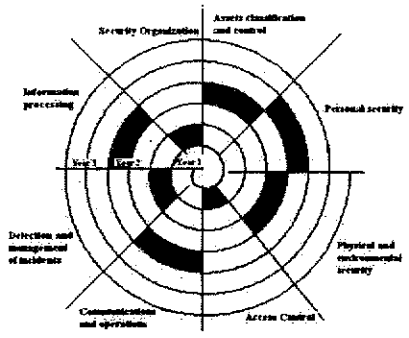

Fig. 2. Example of maturity levels by sections in the spiral model.

Our model does not associate protection levels with sections of the rule but divides each section into three levels and we can evolve the rule over those levels.

Even when the method we propose allows us to evolve protection at the section level, this application is not advisable. It would be perfect that the proposed

improvement plan could be adapted to the unification of the different sections before performing a second level of evolution of the rule, in case it was necessary.

In Fig.2, we can see a maturity level represented through our "spiral model". Even when the different sections could improve independently, it is more logical that we plan improving those aspects that have less security. In our example, we should improve the "access control" section before improving any other section.

In addition, one of the market tendencies during ISMS implementation is the development of a SCOREBOARD that allows the enterprise management board to know immediately the failures and improvements produced in the enterprise systems.

The idea of this prototype is to be able to integrate all information coming from the different security tools existing in enterprises into an only tool that, through the development of security metrics, allows us to update. This will make possible that enterprises know in every moment the state of their security, investing the minimum possible resources. To obtain this, our prototype will face the challenge of making decisions based on the incidences communicated by the staff, detected alerts and so on.

3 Conclusions and Future Work

In this paper, we have presented, from the viewpoint of our practical experience, a first approximation to the implementation of security management systems in small and medium-size enterprises, taking as a basis or framework ISO/IEC 17799 and adapting it to both the size and the maturity level of the enterprise in which it will be implemented.

Given that this proposal is very preliminary, our medium and long term purpose is to perform a research on the complete development of a methodology to implement security management systems that allow an adequate adaptation depending on the security needs and the enterprises characteristics, mainly oriented to small and medium-size enterprises. This methodology will be based on the main security and security management standards and it will be adapted to the social conditions, and above all, to the legal conditions of the environment in which we develop our professional activity.

This methodology will be complemented with a security systems management tool, mainly oriented to the enterprise management board, to facilitate decision making when planning security systems.

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