

A Study of Industrial Security Competency Assessment Framework for Small and Medium Business on Internet of Things Environment

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Abstract—There are convergent threats and vulnerabilities in Internet of things environment. This is the time to need light industrial security competency assessment for Small and Medium Business which is inadequate to build the response systems for new threats compared to big company which has many resource. Therefore, in this study, we develop light industrial security control framework for SMEs which can make them to activate minimum industrial security. Also we develop Security Competency Assessment Framework for Small and Medium Business in the view of organization management.

Keywords—Internet of Things Environment, Industrial Security, Organization Management, Evaluation

I. INTRODUCTION

RECENT industrial environment changing as the age of Internet of things through combination and innovation “between industries”, ‘between technology and industry’ and ‘between technologies’ demands changes of industrial security mixed with humanities and social factors including physical security work process security etc above simple technological security. According to environment change ‘ISO/IEC 27001’, ‘ISMS’, ‘KISA-ISMS’, ‘PIMS’, ‘Industrial Security Management System Control framework’ etc. security control framework supports to activate industrial security in companies and organizations.

But It is hard for SMEs which lack resources to follow the entire control rules suggested in this framework .Also, SMEs is difficult situation to build the response systems for new threats in reality. Thus ,in this study, for solving the problem primary common indicators which cannot help but exclude from security control framework for SMEs and business indicators which can manage business performance in the view of organization management which includes economical process, internal process, internal business process are derived and there is the purpose to develop competency assessment through using this framework.

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II. METHOD AND SCOPE OF THE STUDY

First we choose two representative information security control framework among original security control framework and one industrial security control framework. Also we investigate and analyze control rules which is comprised of 3 frameworks .

Selected information security control framework are ‘ISO/IEC 27001’ which is international standard about Information Security Management System and ‘KISA-ISMS’ which accepts same international standard and is built considering domestic situation. As industrial security control framework, ‘Industrial security management system control framework’ analyzing original study related in industrial security management is selected and we implement analysis of investigation about it

SMEs must select 3 most overlapping essential rules among control rules of original security control framework as common indicators. As selecting some rules which can implement strategic management of achievement and organization management as business indicators, light industrial security control framework is derived.

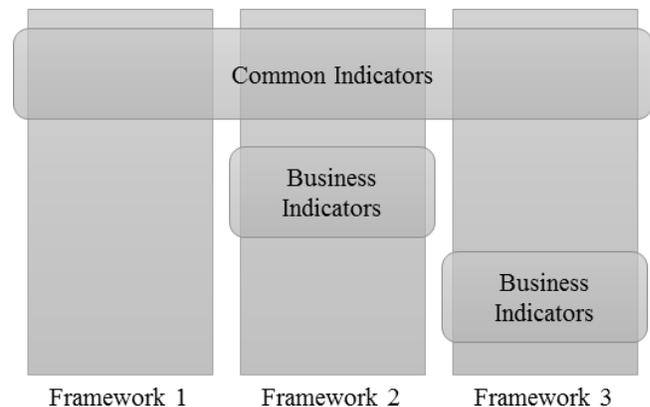


Fig. 1 Research Methodology

III. MAIN SUBJECT

We implement analysis of investigation about original security control framework suggested in the framework ‘ISO/IEC 27001’ control rules of security control framework is analyzed to be comprised of 11 area, 133 control rules including Security policy, Organization of information

security, Asset management and ‘KISA-ISMS’ is analyzed to be comprised of total 104 control rules including 5 area, 12 rules in management process and 13 area, 92 rules in protection measure.

‘Industrial security management system control framework’ is analyzed to be comprised of 11 area, 54 control rules including industrial security policy, industrial organization, industrial secret asset management.

As common indicators of the most overlapping essential rules among 3 security control framework, 5 areas including industrial security policy, industrial organization, industrial security asset management, industrial security accident management and physical environment security management are derived. As business indicators which can implement strategic management organization and management of achievement 3 areas including human resource management, business continuity management and applicability are derived. In detailed rules 6 control rules per each area are derived and lastly total 8 area, 48 control rules including 5 area, 30 control rules as common indicators and 3 area, 18 control rules as business indicator are derived. Major indicators summarized are as below.

IV. CONCLUSIONS

In this study, derived industrial security control framework of 8 area, 48 control rules is so light and can help the SMEs to implement essential minimum industrial security compared to

implement evaluation. In addition, it has signification for SMEs to assess industrial security competency in the view of organization management including Industrial security training of recognition, business continuity management, and monitoring and observation through business indicators.

In the future study, We will analyze conformity and validity related in detailed control rules drawn in this study and need to verify through actual proof analysis

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TABLE I
COMMON INDICATORS

Common indicators	
Industrial security policy	Industrial security policy Establishing the range of industrial security Examining and revising the policy regularly
Industrial security organization	Composing the organizing committee of industrial security Resource allocation of industrial security organization Connecting related-agency
Industrial security Asset Management	Identifying asset of industrial security. Grading mark based on asset value Analyzing distribution channel of industrial security asset

TABLE II
BUSINESS INDICATORS

Common indicators	
Human resource management	Industrial security training of recognition Industrial security separation of duties Disciplinary against security violator
Business continuity management	Business continuity management planning Education of Business continuity plan Analysis of business effect
Applicability	Protecting confidential business information Monitoring and observation Management of strategic technique

original industrial control framework. Also, as evaluation indicator is divided into common indicators and management indicators, when implementing industrial security competency assessment, they arrange professional evaluator by areas and