Pengembangan Kerangka Kerja Cybersecurity Information Sharing untuk Sektor Infrastruktur Informasi Kritikal Nasional di Indonesia = The Development of Cybersecurity Information Sharing Framework for National Critical Information Infrastructure Sector

Farouq Aferudin, author

Abstrak

Peningkatan serangan siber pada infrastruktur infomasi kritikal mengharusnya setiap pemilik infratsruktur untuk berkolaborasi menghadapi berbagai serangan tersebut. Salah satu bentuk kolaborasi yang dapat dilakukan adalah melalui cybersecurity information sharing dimana setiap pemilik infratsruktur dapat memanfaatkan bersama-sama kemampuan yang dimiliki oleh setiap pemilik infratsruktur dalam menghadapi serangan siber. Berbagai grup cybersecurity information sharing telah dibentuk pada berbagai negara baik dalam lingkup nasional maupun sektoral. Di Indonesia sendiri beberapa grup cybersecurity information sharing telah diinisiasi baik secara formal maupun non-formal. Guna mendukung penyelenggaraan cybersecurity information sharing diperlukan dukungan tata kelola berupa kerangka kerja yang dapat dijadikan acuan dalam pelaksanaan cybersecurity information sharing. Penelitian ini berfokus pada melakukan pengembangan kerangka kerja cybersecurity information sharing untuk sektor infratsruktur infomasi kritikal nasional di Indonesia yang terdiri dari tiga output utama yaitu usulan ekosistem, usulan kerangka kerja dan rekomendasi implementasi kerangka kerja. Usulan kerangka kerja disusun berdasarkan beberapa standar terkait cybersecurity information sharing antara lain ISO/IEC 27032, NIST SP 800-150 dan ENISA ISAC in a Box. Usulan kerangka kerja juga didasarkan pada best practice yang dikeluarkan beberapa organisasi di bidang keamanan siber dan best practice penyelenggaraan cybersecurity information sharing pada negara-negara yang dianggap baik dalam penyelenggaraan keamanan siber antara lain Amerika Serikat, Australia, Inggris, Singapura dan Kanada serta disesuaikan dengan kondisi ekosistem keamanan siber dan pelindungan IIKN di Indoensia. Guna melakukan validasi terhadap output penelitian, digunakan metode expert judgement terhadap tiga expert di bidang keamanan siber dan pelindungan IIKN untuk mendapatkan saran perbaikan terhadap usulan kerangka kerja. Metode expert judgement juga dilakukan secara kuantitatif untuk mengukur interrater reliability antar expert terhadap rekomendasi implementasi kerangka kerja dengan menggunakan Fleis Kappa Statistic. Hasil pengukuran menunjukkan nilai kappa sebesar 0.938 yang berarti usulan rekomendasi implementasi kerangka kerja mendapatkan kesepakatan para expert judgement pada level almost perfect agreement. <hr /> The increase in cyber attacks on critical information infrastructure requires every infrastructure owner to collaborate against these attacks. One form of collaboration that can be done is through cybersecurity information sharing where each infrastructure owner can take advantage of the capabilities of each infrastructure owner in dealing with cyber attacks. Various cybersecurity information sharing groups have been formed in various countries, both nationally and sectorally. In Indonesia, several cybersecurity information sharing groups have been initiated both formally and informally. In order to support the implementation of cybersecurity information sharing, governance support is needed in the form of a framework that can be used as a reference in the

implementation of cybersecurity information sharing. This study focuses on designing a cybersecurity information sharing framework for the national critical information infrastructure sector in Indonesia, which consists of three main outputs, namely ecosystem proposals, framework proposals and framework implementation recommendations. The proposed framework is based on several standards related to cybersecurity information sharing, including ISO/IEC 27032, NIST SP 800-150 and ENISA ISAC in a Box. The proposed framework is also based on best practices issued by several organizations in the field of cybersecurity and best practices in implementing cybersecurity information sharing in countries that are considered good in cybersecurity implementation, including the United States, Australia, England, Singapore and Canada and are adapted to conditions. cyber security ecosystem and IIKN protection in Indonesia. In order to validate the research output, the expert judgment method was used against three experts in the field of cyber security and IIKN protection to obtain suggestions for improvements to the proposed framework. The expert judgment method was also carried out quantitatively to measure interrater reliability between experts on the recommendations for implementing the framework using Fleis Kappa Statistics. The measurement results show a kappa value of 0.938, which means that the proposed framework implementation recommendation gets an agreement from the expert judges at the almost perfect agreement level.</p>