


Chapter 11

QR Multilevel Codes to Reduce Cybersecurity Risks in the Logistics of Freight Transport in Ports

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ABSTRACT

A country's national security depends on many combined and constantly changing factors. However, one of the most preponderant aspects is the access control of goods and people entering and leaving the country through its customs, as a result of mobility and international trade currently taking place. Throughout the territory of a country, the entry and exit of both merchandise and people of different natures or nationalities, respectively, are carried out by different means of transport. Therefore, it is necessary to establish more efficient control points that manage, supervise, and, where appropriate, tax this activity, because otherwise products, materials, or people that pose a risk to human health may enter the country. In this context, this chapter shows a practical tool, based on multilevel QR codes, to improve the identification and supervision of goods entering a country through its port customs to show a technology that reduces cybersecurity risks in freight transport logistics.

INTRODUCTION

The concepts of security, peace, identity, and other terminologies contextualized in the scenario of international political theory have been the object of many interpretations (most of them with an evident ideological bias). However, due to its apparent lack of conceptual limits, security, as a concept, is used to attract and stimulate the sponsorship of multiple political projects at the federal and international levels of politics. In this sense, Williams (2008) argued that “security is, therefore, a powerful political tool to draw attention to priority elements in the competition for government attention.” On the other

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hand, Makinda (1998) defined security as “the preservation of society’s norms, rules, institutions, and values”. In addition, he also assured that all institutions, principles, and structures associated with society, including its population, must be protected from “military and non-military threats.” The term “preservation”, as an important component of this definition, presupposes conscious, deliberate, and well-defined actions. Thus, the perception of a society’s leadership determines its actions and guides its efforts, which becomes evident in the breadth and depth of that society’s security agenda.

Now let’s see another very interesting concept which refers to National Security. The modern concept of National Security emerged in the 17th century during the Thirty Years’ War in Europe and the Civil War in England. In 1648, the Peace of Westphalia established the idea that the relationship between State and Nation had sovereign control not only of the internal affairs of a country or religion but also of external security. The definition of National Security is complex, since it encompasses, in turn, different concepts such as Power (which can be better understood as the possession of a nation’s control over its sovereignty and destiny); Military strength (refers to the military capacity and capabilities of the armed forces); Force (refers to the use of a military or police capacity to achieve some objective) and National Defense (refers, strictly, to the capacity of the armed forces to defend both the sovereignty of a nation and the lives of its people) (Holmes, 2015).

On the other hand, there are currently non-military concepts associated with National Security. Even though in 1947 the United States created the National Security Council to “advise the President regarding the integration of domestic, foreign, and military policies related to national security...” and that for much of the 20th century, the conception of National Security was oriented to topics oriented to the military environment, the concept of National Security expanded, gradually, beyond the powers that could be made to the armed forces. Consequently, the days when National Security was defined solely in terms of the military were a thing of the past. Since then, Homeland Security has come to mean different things to different people knowledgeable about the subject. Currently, there are all kinds of definitions for this concept, which include economic security; energy security; environmental security, food security, sanitary and health security, women’s security, maritime security, and port security, among others. In addition, today there are the following terms associated with the concept of National Security: Political security (refers to protecting the sovereignty of the government and its political system and the security of society against illegal internal attacks); Economic security (recently, this term has been contextualized in an environment of human security from the perspective of eradicating poverty and eliminating income inequality); Energy and natural resources security (refers to the degree to which a country or region has access to energy resources such as oil, gas, water and various minerals); Homeland security (refers to the security of airports, ports, border security, transportation security, immigration control and other related matters); Cybersecurity (refers to the protection of the computer infrastructure, data processing, operating systems of a country or region against harmful interference, whether carried out from outside or inside the country or region); Human security (this term was developed by the United Nations at the end of the Cold War and refers to the security and protection of people from hunger, disease and repression, including harmful disturbances of daily life (The White House, 2021-2022a-2022b; Holmes, 2015).

Over time, and as already mentioned, the term National Security was expanded to include other terms such as economic security, environmental security, food security, health security, personal security, community security, political security. and the protection of women and minorities and, finally, environmental security (refers, roughly, to conflicts caused by problems such as water scarcity, power interruptions or severe climate change; these problems are supposed to be “transnational” and therefore can cause conflicts between nations). That is, the abstract concepts referred to as “environment” and

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