A SYSTEMIC MODEL FOR SECURITY AND RISK MANAGEMENT IN TELECOM NETWORKS
(Article submitted for presentation only)

Stewart Kowalski
Department of Computer and Systems Sciences,
Stockholm University/Royal Institute of Technology,
Stockholm, Sweden

and

Marcus Nohlberg
School of Humanities and Informatics,
University of Skövde,
Skövde, Sweden

and

Jeffy Mwakalinga
Department of Computer and Systems Sciences,
Stockholm University/Royal Institute of Technology,
Stockholm, Sweden

1. Introduction
An anomaly occurs when current paradigms can not explain observed phenomena [1]. To the authors’ knowledge no information security paradigm can adequately explain why the current information security (IS) market continues to be dysfunctional. Anderson’s [2] explanations do help us to understand why security is “hard” they do not however adequately explain why the dysfunctional IS markets continues to survive and repeat themselves in every new generation of IT productions and services.

In this presentation we outline a systemic matrix paradigm which attempts to explain how the IS markets work and why they are dysfunctional. The presentation is divided into three sections. In the first section we outline the concept of dysfunctional markets in general and then review the IS markets structures in more detail. The second section reviews some current and popular explanations of why the IS markets are dysfunctional. In the third section we outline how security values chains can be integrated into a socio-technical model of security to explain both why and how IS markets are dysfunctional. We conclude the presentation with a discussion on how our current research with chat-bots and life learning in telecom security and risk management attempts to improve the functionality of the market.

2. What are Dysfunctional Markets
A market of any products, be they information systems or cars, should be able to regulate itself through the laws of demand and supply. “Markets may therefore be considered to be dysfunctional when they persistently fail to bring consumers the benefits that would be expected in a functioning competitive market. Using government intervention to address such markets would be advisable, however, only if its benefits are greater than its costs” [3].

3. The Dysfunctional IS Market
Anderson [2] explains security markets failures in a language of micro economics. He argues that security problems are partly due to who is liable. Anderson gives an example of US banks versus banks in UK, Netherlands and Norway and concludes that security fails because of the desire to exercise monopoly, to charge different prices for different classes of users for the same products. Anderson takes up an economic perspective of security but we need to also consider social and technical perspectives as well.

4. Systemic Model the Market
The systemic or social technical modeling approach [4] proposed by Kowalski aims at addressing security problems from different perspectives including, social, economic and technical. Applying this model to value based chains we have an abstract information security value chains which contains deterrence, protection, detection, response, and recovery sub systems. The existence of a gap in these sub systems can be used to explain dysfunctionalities in the IS marketplace.

5. Conclusion
To fill gaps in the security value chain we currently are running trials with chat-bot technology to make user and subscriber of the telecommunication network aware of gaps in the hope that their awareness will induce the IS market to supply secure products and services.
6. References


