



# Knowledge Guide on Security Economics



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# Rational for the Development of the new KG

The current version of CyBOK (CyBOK 1.1) does not address the important topic of cyber security economics to a sufficient level. While there are some mentions of this topic in several KAs, there are many important aspects of this domain which are not discussed in CyBOK. The proposed change is to introduce **a new Knowledge Guide on Cyber Security Economics**, complementary to the Risk Management & Governance KA.

In CyBOK 1.1, Cyber Security Economics is only briefly touched upon in the following Knowledge Areas (KAs):

1. CyBOK Introduction discusses Cyber Security Economics as a crosscutting theme ([https://www.cybok.org/media/downloads/Introduction\\_v1.1.0.pdf](https://www.cybok.org/media/downloads/Introduction_v1.1.0.pdf), Sec. 5.1)
2. Risk Management & Governance KA discusses security metrics ([https://www.cybok.org/media/downloads/Risk\\_Management\\_Governance\\_v1.1.1.pdf](https://www.cybok.org/media/downloads/Risk_Management_Governance_v1.1.1.pdf), Sec. 6.6)
3. Security Operations & Incident Management KA briefly mentions cyber insurance ([https://www.cybok.org/media/downloads/Security\\_Operations\\_Incident\\_Management\\_v1.0.2.pdf](https://www.cybok.org/media/downloads/Security_Operations_Incident_Management_v1.0.2.pdf), Sec 5.4)
4. Human Factors KA briefly mentions the role of economics alongside Human Factors in understanding cybercrime ([https://www.cybok.org/media/downloads/Human\\_Factors\\_v1.0.1.pdf](https://www.cybok.org/media/downloads/Human_Factors_v1.0.1.pdf), Sec. 1)

## Economics in the Initial Scoping

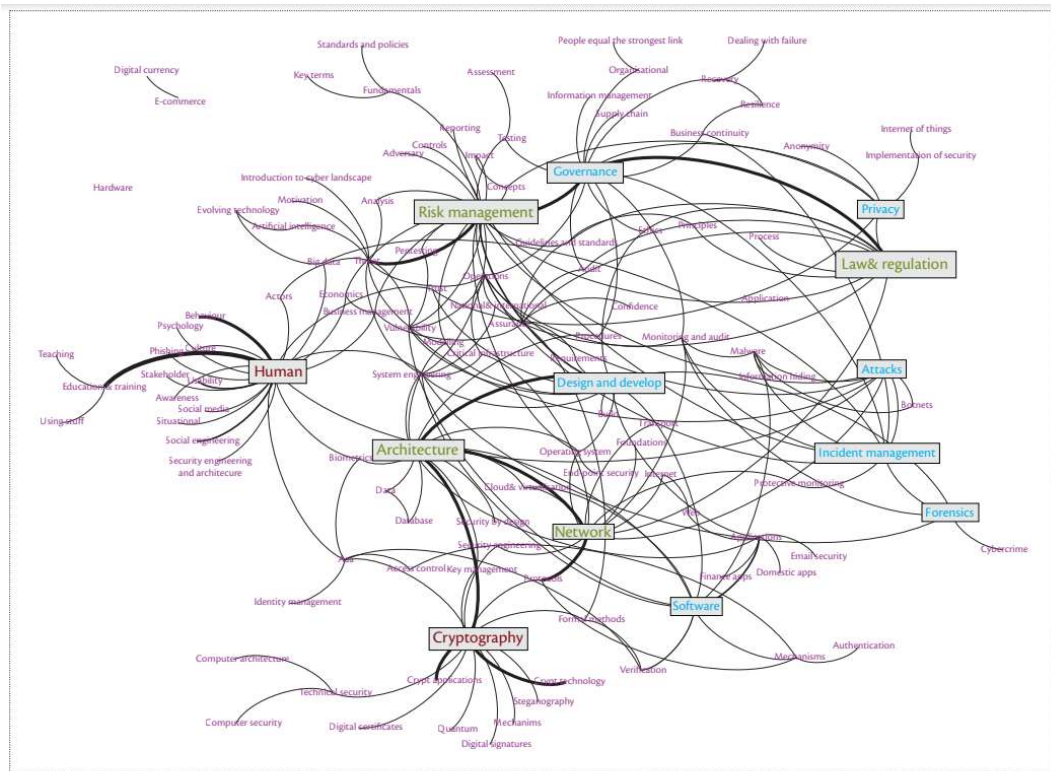


Figure 2. An example graph of distilled KAs derived from the analysis of workshop data.

<<- During the initial phase of CyBOK project, economics was identified as one of the topics to be included under a higher-level topic “Risk Management” [1].

Economics of cyber security at-scale was also discussed in the first workshop and showcase event in 2019 and noted as one of important crosscutting themes: *“There is a body of research on economics of information security and there is some coverage of this in the Introduction to CyBOK as a crosscutting theme. However, as we build more complex interconnected systems, how do we establish the trade-offs that are required to provide an optimal level of security – taking into account technical, organisational and human factors.”* [2]

[1] Rashid, A., Danezis, G., Chivers, H., Lupu, E., Martin, A., Lewis, M., & Peersman, C. (2018). Scoping the cyber security body of knowledge. *IEEE Security & Privacy*, 16(3), 96-102.

[2] Rashid, A., L. Nautiyal, Y. Rigby “CYBER SECURITY AT SCALE: CHALLENGES FOR RESEARCH, EDUCATION AND TRAINING”. Available at [https://www.cybok.org/media/downloads/Final\\_-\\_CyBOK\\_Workshop\\_Report\\_2\\_April\\_2020\\_.pdf](https://www.cybok.org/media/downloads/Final_-_CyBOK_Workshop_Report_2_April_2020_.pdf)

## Scoping Workshop (Summer 2022)

- The group unanimously agreed that Cyber Security Economics is not sufficiently addressed in CyBOK 1.1.
- The expert group confirmed that Cyber Security Economics has stabilized foundations in the published academic literature, it is a well-established area of research with an existing strong research community working in this area.
- A list of important topics for inclusions have been produced as an output from the scoping exercise.
- The title of a new area needs careful consideration.
- The group suggested that the Workshop on the Economics of Information Security (*WEIS*) community is the most prominent group of experts working in this area.

- 10 experts from Europe, South Africa, UK and US
- Online workshop
- Scoping of a CyBOK document on Security Economics

### Relates to existing KAs:

Risk Management & Governance KA;  
Security Operations & Incident Management KA;  
Human Factors KA

### Depends on External Knowledge:

Economics, Econometrics, Insurance, Finance,  
Decision-Making

# Cyber Security Economics – Knowledge Guide

**Status:** workshop held; scope defined; considered by Executive Board and Steering Committee; author and reviewers appointed; ‘strawman’ produced and reviewed; full draft is produced;  $\frac{3}{4}$  reviews received; the author is revising the draft.

| Author                                    | Editor   | Reviewers   |
|---|--|---|
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# Cyber Security Economics – Knowledge Guide

(Draft Outline – Subject To Change)

- KG complements the Risk Management and Governance KA
- KG outline
  - Security failures (misaligned incentives and market failures)
  - Measuring harms and security effectiveness
  - Firm-level solutions
  - Market-level solutions (ex-ante safety regulation, ex post liability, certifying products and processes, and information disclosure)

# Cyber Security Economics – Knowledge Guide



Available soon!

- <https://www.cybok.org/supplementaryguides/>
- Knowledge Guide
- Webinar
- Webinar Presentation slides
- Podcast



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CyBOK

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