Learning Guide Unit 8

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Description

Learning Guide Unit 8

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Overview

UNIT 8: Blockchain Applications in Cybersecurity

Topics

- Blockchain technology in the supply chain
- Blockchain applications in cybersecurity
- Blockchain applications for Sustainability and Open Innovation

Learning Objectives

By the end of this Unit, you will be able to:

1. Compare Blockchain applications.
2. Explore the cybersecurity approach to Blockchain sustainability and innovation.

Tasks

- Peer assess Unit 7 Written Assignment
- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Make entries to the Learning Journal
- Take the Self-Quiz
- Read the Unit 9 Learning Guide carefully for instructions on the Final Exam
- Take the Review Quiz

Introduction

Some of you might ask the question, “What is a Blockchain?” This term came to life only in the 21st century. According to TechTerms (2021) online dictionary, “A blockchain is a digital record of transactions. The name comes from its structure, in which individual records, called blocks, are linked together in a single list, called a chain. Blockchains are used for recording transactions made with cryptocurrencies, such as Bitcoin, and have many other applications.” Considering the scale of online commercial operations, cybersecurity for the Blockchains is imperative.

In this unit, we focus on cybersecurity aspects related to Blockchain technology and its applications.

Resources:

Simplilearn. (2020, June 12). *Why blockchain matters more than you think - Jack Ma, Bill Gates, Elon Musk, Vitalik|Simplilearn* [Video]. YouTube. https://www.youtube.com/watch?v=GVN0Ddr3xig

Blockchain definition. (n.d.). In *The tech terms computer dictionary*. Retrieved January 10, 2022, from https://techterms.com/definition/blockchain

Blockchain technology in the supply chain

With the integration of new cloud computing applications in business processes, a traditional supply chain has been expanded and transformed into an international ecosystem that requires cooperation among all participants of the system regardless of their geolocations or stakeholders. This vast scale of operations is not viable without trust, reliable data exchange, operations visibility, and transactions' transparency at every step of the supply chain process.

According to Thomas et al. (2020):

- A 2017 study indicated that nearly 62% of supply chain executives claimed to have engaged with blockchain technology.
- A blockchain network is a distributed ledger—transactions are contained in blocks that are linked together in chronological order to form a tamper-proof chain, which is usually stored in all network nodes.
- By eliminating intermediaries to achieve trust among all stakeholders, efficiency improves and the cost is reduced for the entire supply chain.

Reading Assignments:

Read Using blockchain to drive supply chain transparency

Watch

- Why Blockchain Technologies Matter
- Blockchain in the Supply Chain - Case Examples

Resources:

Edmund Hillary Fellowship. (2018, May 31). *Why blockchain technologies matter* [Video]. YouTube. https://www.youtube.com/watch?v=STq0MZa-H6U

Kochar, S. (2017, February 17). *Blockchain for supply chain transparency & traceability – Simardeep* [Video]. YouTube. https://www.youtube.com/watch?v=FtK65VH5OBg

Tech Asia. (2020, August 7). *Blockchain in the supply chain - case examples* [Video]. YouTube. https://www.youtube.com/watch?v=iKsezyyjGYE

Using blockchain to drive supply chain transparency. (2017). Deloitte. https://www2.deloitte.com/us/en/pages/operations/articles/blockchain-supply-chain-innovation.html

Zhang, J. (2020, September 9). Deploying blockchain technology in the supply chain. In Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. (Eds.), *Computer security threats.* https://www.intechopen.com/books/computer-security-threats

Blockchain applications in cybersecurity

Growing utilization of Blockchain technology in various areas of business, economy, science, governmental matters, eCommerce, and digital identity management opens not only a new domain of opportunities but also a cybersecurity challenge.

Reading Assignments:

Read

- Blockchain Applications in Cybersecurity
- 4 Promising Use Cases Of Blockchain In Cybersecurity

Watch Blockchain Applications In Supply Chain, Cybersecurity, Voting, Insurance, Real Estate | Simplilearn

Resources:

Arnold, A. (2019, January 30). *4 Promising use cases of blockchain in cybersecurity*. Forbes. https://www.forbes.com/sites/andrewarnold/2019/01/30/4-promising-use-cases-of-blockchain-in-cybersecurity/?sh=25d25cda3ac3

Blockgeeks. (2018, October 1). *Real world blockchain applications – cybersecurity* [Video]. YouTube. https://www.youtube.com/watch?v=WvrmgR5gpvA

Lage, O., Diego, S., Urkizu, B., Gomez, E., Gutierrez, Ivan (2019, November 19). Blockchain Applications in Cybersecurity. In Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. (Eds.), *Computer security threats*. https://www.intechopen.com/books/computer-security-threats

Simplilearn. (2019, May 23). *Blockchain applications in supply chain, cybersecurity, voting, insurance, real estate | Simplilearn* [Video]. YouTube. https://www.youtube.com/watch?v=Y56wQGZ3v-4

Blockchain applications for Sustainability and Open Innovation

Active use of various new technologies for sustainable development in different fields is capable of providing a wide range of solutions. Though, Thomas (2020) warn that "the mentioned technologies will create ever-increasing complex systems in terms of heterogeneity, autonomy, interoperability, and scalability that will also come with additional cybersecurity risks and threats of malicious attacks."

Reading Assignments:

Read A Survey of Blockchain Technologies for Open Innovation

Watch Blockchain Technology and Sustainable Development | Dr. Mike Troilo | TEDxUTulsa

Resources:

EOSIO. (2018, September 10). *How can blockchain help solve environmental issues?* [Video]. YouTube. https://www.youtube.com/watch?v=PAWEmyMKLCU

Rosa, J. L., Torres-Padrosa, V., el-Fakdi, A., Gibovic, D., Hornyak, O., Maicher, L., & Miralles, F. (2017, November). A survey of blockchain technologies for open innovation. *World Open Innovation Conference 2017 at San Francisco,* pp. 1 -25. https://www.researchgate.net/publication/321381169_A_Survey_of_Blockchain_Technologies_for_Open_Innovation

TEDx Talks. (2019, May 8). *Blockchain technology and sustainable development | Dr. Mike Troilo | TEDxUTulsa* [Video]. YouTube. https://www.youtube.com/watch?v=ycALWKXsA-k

Zhang, J. (2020, September 9). Deploying blockchain technology in the supply chain. In Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. (Eds.), *Computer security threats.* https://www.intechopen.com/books/computer-security-threats

Reading Assignment

1. Arnold, A. (2019, January 30). *4 Promising use cases of blockchain in cybersecurity*. Forbes. **https://www.forbes.com/sites/andrewarnold/2019/01/30/4-promising-use-cases-of-blockchain-in-cybersecurity/?sh=25d25cda3ac3**
2. Blockchain definition. (n.d.). In *The tech terms computer dictionary*. Retrieved January 10, 2022, from **https://techterms.com/definition/blockchain**
3. Lage, O., Diego, S., Urkizu, B., Gomez, E., Gutierrez, Ivan (2019, November 19). Blockchain Applications in Cybersecurity. In Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. (Eds.), *Computer security threats*. **https://www.intechopen.com/books/computer-security-threats**
4. Rosa, J. L., Torres-Padrosa, V., el-Fakdi, A., Gibovic, D., Hornyak, O., Maicher, L., & Miralles, F. (2017, November). A survey of blockchain technologies for open innovation. *World Open Innovation Conference 2017 at San Francisco,* pp. 1-25. **https://www.researchgate.net/publication/321381169_A_Survey_of_Blockchain_Technologies_for_Open_Innovation**
5. *Using blockchain to drive supply chain transparency.* (2017). Deloitte. **https://www2.deloitte.com/us/en/pages/operations/articles/blockchain-supply-chain-innovation.html**
6. Zhang, J. (2020, September 9). Deploying blockchain technology in the supply chain. In Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. (Eds.), *Computer security threats.* **https://www.intechopen.com/books/computer-security-threats**

Video Resources

1. Blockgeeks. (2018, October 1). *Real world blockchain applications – cybersecurity* [Video]. YouTube. **https://www.youtube.com/watch?v=WvrmgR5gpvA**
2. Edmund Hillary Fellowship. (2018, May 31). *Why blockchain technologies matter* [Video]. YouTube. **https://www.youtube.com/watch?v=STq0MZa-H6U**
3. EOSIO. (2018, September 10). *How can blockchain help solve environmental issues?* [Video]. YouTube. **https://www.youtube.com/watch?v=PAWEmyMKLCU**
4. Kochar, S. (2017, February 17). *Blockchain for supply chain transparency & traceability – Simardeep* [Video]. YouTube. **https://www.youtube.com/watch?v=FtK65VH5OBg**
5. Simplilearn. (2019, May 23). *Blockchain applications in supply chain, cybersecurity, voting, insurance, real estate | Simplilearn* [Video]. YouTube. **https://www.youtube.com/watch?v=Y56wQGZ3v-4**
6. Simplilearn. (2020, June 12). *Why blockchain matters more than you think - Jack Ma, Bill Gates, Elon Musk, Vitalik|Simplilearn* [Video]. YouTube. **https://www.youtube.com/watch?v=GVN0Ddr3xig**
7. Tech Asia. (2020, August 7). *Blockchain in the supply chain - case examples* [Video]. YouTube. **https://www.youtube.com/watch?v=iKsezyyjGYE**
8. TEDx Talks. (2019, May 8). *Blockchain technology and sustainable development | Dr. Mike Troilo | TEDxUTulsa* [Video]. YouTube. **https://www.youtube.com/watch?v=ycALWKXsA-k**

Discussion Assignment

After reading this unit materials and conducting independent online research about Blockchain technology:

- Select two different Blockchain applications that are widely used.
- Compare and contrast the pros and cons of these applications.
- Share your personal experience related to the use of Blockchain technology and/or applications. If you do not have personal experience with Blockchain applications, select a case study that you find the most interesting from the research you have conducted. Explain what attracted you to the case and why.

Your Discussion should be a minimum of 200 words in length and not more than 500 words. Please include a word count. Following the APA standard, use references and in-text citations for the textbook and any other sources.

Learning Journal

The Learning Journal is a tool for self-reflection on the learning process. In addition to completing directed tasks, you should use the Learning Journal to document your activities, record problems you may have encountered, and draft answers for Discussion Forums and Assignments. The Learning Journal should be updated regularly (weekly), as your instructor will assess the learning journals as part of your Final Grade.

In this unit, we learned about Blockchain applications to mitigate or prevent cyber threats from damaging computer networks and data. To reflect on what you have learned, please, answer each of the following questions:

- Describe what was the most interesting topic you learned about in this unit. Think about reasons why you noticed this topic, your impression, your plans for further exploration of that topic.
- Discuss how do Blockchain applications help to implement sustainability and improve the environment around the world? Support your answer with examples.

The Learning Journal entry should be a minimum of 500 words and not more than 750 words. Use APA citations and references if you use ideas from the readings or other sources.

Refer Learning Journal Rubric

Self-Quiz

The Self-Quiz gives you an opportunity to self-assess your knowledge of what you have learned so far.

The results of the Self-Quiz do not count towards your final grade. However,the quiz is an important part of the University's learning process and it is expected that you will take it to ensure understanding of the materials presented. Reviewing and analyzing your results will help you perform better on future Graded Quizzes and the Final Exam.

Please access the Self-Quiz on the main course homepage; it is listed inside the Unit.

Review Quiz

The Review Quiz will test your knowledge of all materials learned in this course. The results of this quiz will not count towards your final grade, but will help guide you in more thoroughly reviewing necessary topics and adequately preparing for the Final Exam.

Please access the Review Quiz under Unit 9 on the main course homepage; it will be listed inside the Unit.

Checklist

- Peer assess Unit 7 Written Assignment
- Read the Learning Guide and Reading Assignments
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