

COURSEWARE

BLOCKCHAIN FOUNDATION COURSEWARE ENGLISH

Blockchain Foundation
Courseware - English

Publisher about the Courseware

The Courseware was created by experts from the industry who served as the author(s) for this publication. The input for the material is based on existing publications and the experience and expertise of the author(s). The material has been revised by trainers who also have experience working with the material. Close attention was also paid to the key learning points to ensure what needs to be mastered.

The objective of the courseware is to provide maximum support to the trainer and to the student, during his or her training. The material has a modular structure and according to the author(s) has the highest success rate should the student opt for examination. The Courseware is also accredited for this reason, wherever applicable.

In order to satisfy the requirements for accreditation the material must meet certain quality standards. The structure, the use of certain terms, diagrams and references are all part of this accreditation. Additionally, the material must be made available to each student in order to obtain full accreditation. To optimally support the trainer and the participant of the training assignments, practice exams and results are provided with the material.

Direct reference to advised literature is also regularly covered in the sheets so that students can find additional information concerning a particular topic. The decision to leave out notes pages from the Courseware was to encourage students to take notes throughout the material.

Although the courseware is complete, the possibility that the trainer deviates from the structure of the sheets or chooses to not refer to all the sheets or commands does exist. The student always has the possibility to cover these topics and go through them on their own time. It is recommended to follow the structure of the courseware and publications for maximum exam preparation.

The courseware and the recommended literature are the perfect combination to learn and understand the theory.

-- Van Haren Publishing

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Van Haren Publishing (VHP) specializes in titles on Best Practices, methods and standards within four domains:

- IT and IT Management
- Architecture (Enterprise and IT)
- Business Management and
- Project Management

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Topics are (per domain):

IT and IT Management

ABC of ICT
ASL®
CATS CM®
CMMI®
COBIT®
e-CF
ISO/IEC 20000
ISO/IEC 27001/27002
ISPL
IT4IT®
IT-CMF™
IT Service CMM
ITIL®
MOF
MSF
SABSA
SAF
SIAM™
TRIM
VeriSM™

Enterprise Architecture

ArchiMate®
GEA®
Novius Architectuur
Methode
TOGAF®

Business Management

BABOK® Guide
BiSL® and BiSL® Next
BRMBOK™
BTF
EFQM
eSCM
IACCM
ISA-95
ISO 9000/9001
OPBOK
SixSigma
SOX
SqEME®

Project Management

A4-Projectmanagement
DSDM/Atern
ICB / NCB
ISO 21500
MINCE®
M_o_R®
MSP®
P3O®
PMBOK® Guide
Praxis®
PRINCE2®

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Colophon

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Ton van Lieshout (Capgemini)

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Self-Reflection of understanding Diagram

‘What you do not measure, you cannot control.’ – Tom Peters

Fill in this diagram to self-evaluate your understanding of the material. This is an evaluation of how well you know the material and how well you understand it. In order to pass the exam successfully you should be aiming to reach the higher end of Level 3. If you really want to become a pro, then you should be aiming for Level 4. Your overall level of understanding will naturally follow the learning curve. So, it’s important to keep track of where you are at each point of the training and address any areas of difficulty.

Based on where you are within the Self-Reflection of Understanding diagram you can evaluate the progress of your own training.

<i>Level of Understanding</i>	<i>Before Training (Pre-knowledge)</i>	<i>Training Part 1 (1st Half)</i>	<i>Training Part 2 (2nd Half)</i>	<i>After studying / reading the book</i>	<i>After exercises and the Practice exam</i>
<i>Level 4 I can explain the content and apply it .</i>					
<i>Level 3 I get it! I am right where I am supposed to be.</i>					<i>Ready for the exam!</i>
<i>Level 2 I almost have it but could use more practice.</i>					
<i>Level 1 I am learning but don't quite get it yet.</i>					

(Self-Reflection of Understanding Diagram)

Write down the problem areas that you are still having difficulty with so that you can consolidate them yourself, or with your trainer. After you have had a look at these, then you should evaluate to see if you now have a better understanding of where you actually are on the learning curve.

Troubleshooting

Problem areas:

Topic:

Part 1

Part 2

You have gone through the book and studied.

You have answered the questions and done the practice exam.

Timetable

Day 1

09:00 – 10:00 Introduction

10:00 – 12:00 Blockchain Basics

Blockchain Technology

Additional Blockchain Elements

Structure of a Blockchain Network

12:00 – 12:45 Lunch break

12:45 – 14:45 Blockchain Challenges

Challenges for a Blockchain

Blockchain Risk Mitigation

14:45 – 17:00 Applications of a Blockchain

Day 2

09:00 – 9:30 Recap Day 1

9:30 – 12:00 Applications of a Blockchain

Blockchain Use Case

First Generation Blockchain Technology

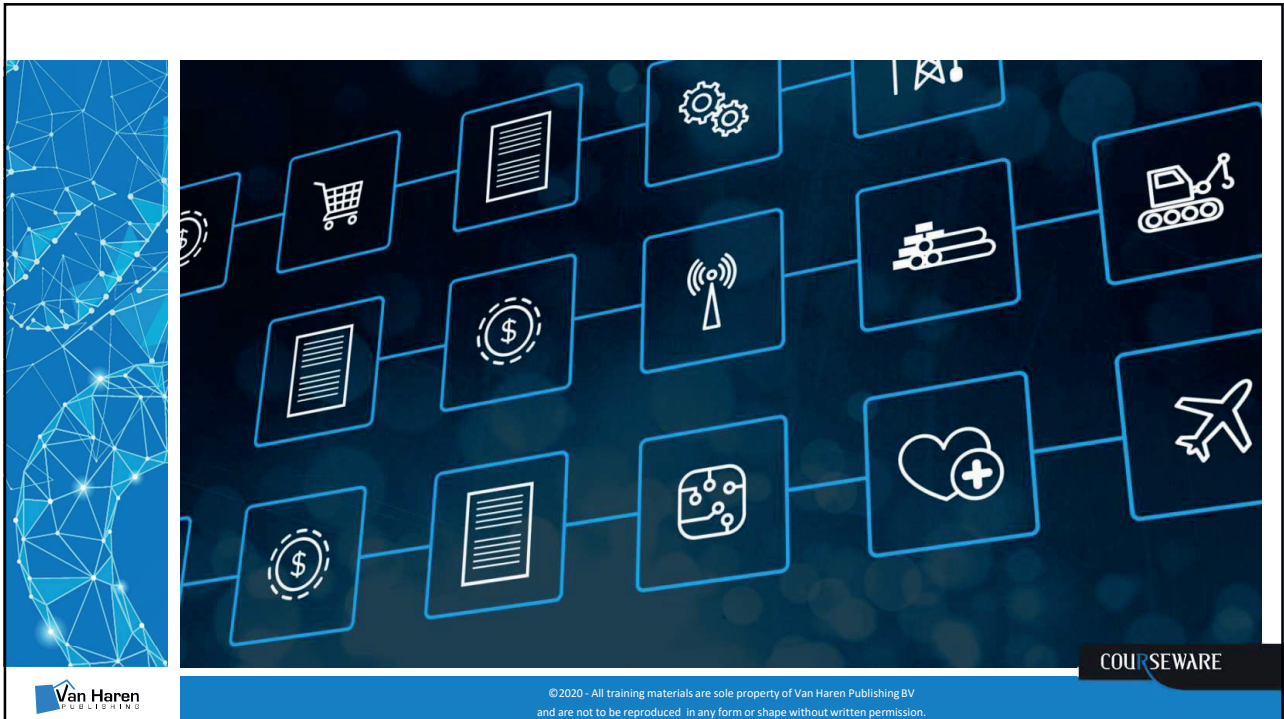
Blockchain Technology Supporting Businesses

Blockchain Applications Supporting People

12:00 – 12:45 Lunch break

12:45 – 14:45 Innovations in Blockchain Technology

14:45 – 17:00 Blockchain Getting started



Start and end times

Facilities

Breaks and lunch

Smoking

Health and safety

Materials

THE DOMESTICS

Introductions

- Name
- Organization
- Title/ Role
- Experience
- Your objectives:
 - for the day
 - and beyond

Course Objectives and Target Group

- EXIN Blockchain Foundation is a certification that validates a professional's knowledge about:
 - blockchain basics;
 - blockchain challenges;
 - applications of a blockchain;
 - blockchain innovations.
- This certification is tailored to professionals in both business and IT who have, or aim to have, a professional role in blockchain as a cryptographic and smart contract solution.

Exam Format EXIN Blockchain Foundation

Examination type:	Multiple-choice Questions
Number of questions:	40
Pass mark:	65% (26 / 40 questions)
Open book/notes:	No
Electronic equipment/aides permitted:	No
Exam duration:	60 minutes

The Rules and Regulations for EXIN's examinations apply to this exam.

Exam Literature

Tiana Laurence

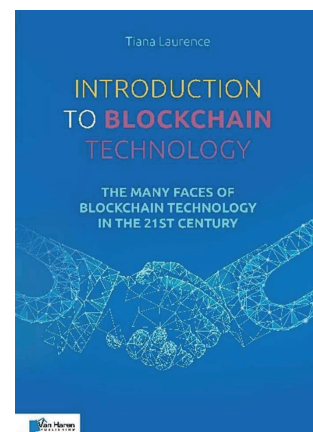
Introduction to Blockchain Technology
The many faces of blockchain technology in the 21st century

Van Haren Publishing (November 2019)

ISBN: 978 94 018 0499 8 (hardcopy)

ISBN: 978 94 018 0501 8 (eBook)

ISBN: 978 94 018 0504 9 (ePub)



Requirements for Certification

Successful completion of the EXIN Blockchain Foundation or Essentials exam.



Course contents

1. Blockchain Basics
 - 1.1. Blockchain Technology
 - 1.2. Additional Blockchain Elements
 - 1.3. Structure of a Blockchain Network
2. Blockchain Challenges
 - 2.1. Challenges for a Blockchain
 - 2.2. Blockchain Risk Mitigation
3. Applications of a Blockchain
 - 3.1. Blockchain Use Case
 - 3.2. First Generation Blockchain Technology
 - 3.3. Blockchain Technology Supporting Businesses
 - 3.4. Blockchain Applications Supporting People
 - 3.5. Blockchain and the World Economy
4. Blockchain Innovations
 - 4.1. Innovations in Blockchain Technology
5. Blockchain Getting started

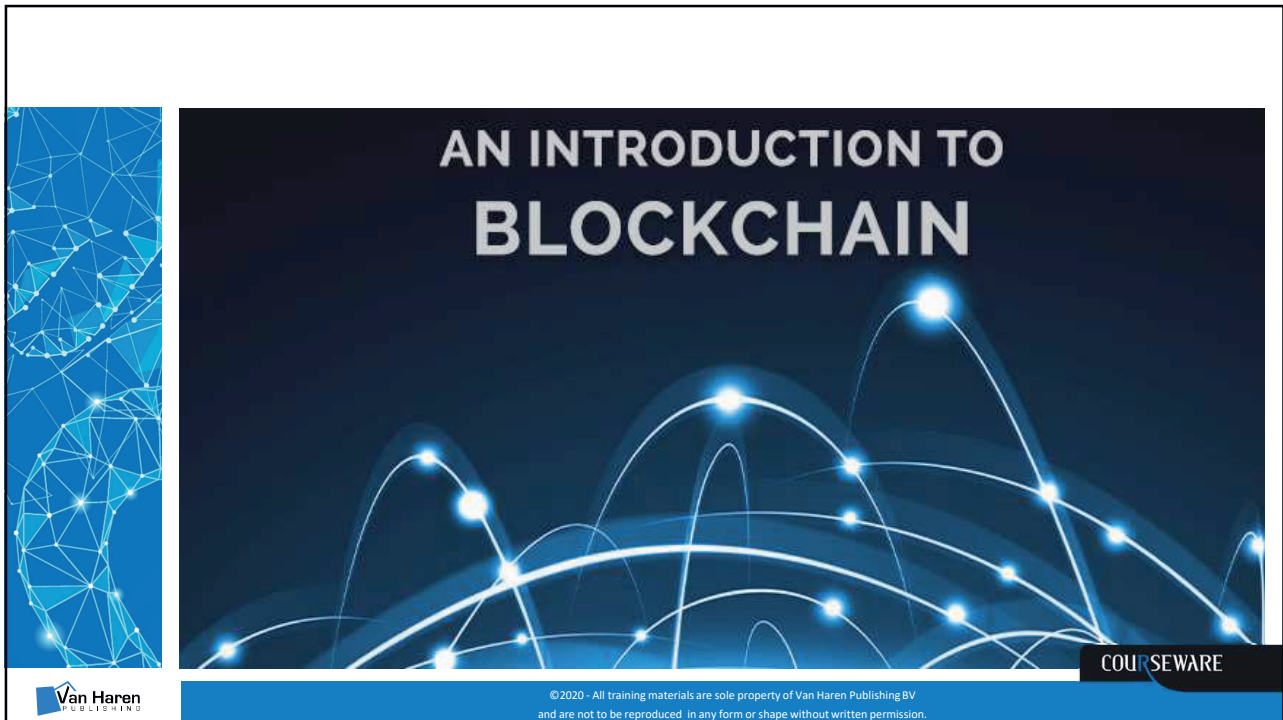
Agenda

DAY 1

- 09:00 – 10:00 Introduction
- 10:00 – 12:00 Blockchain Basics
 - Blockchain Technology
 - Additional Blockchain Elements
 - Structure of a Blockchain Network
- 12:00 – 12:45 Lunch break
- 12:45 – 14:45 Blockchain Challenges
 - Challenges for a Blockchain
 - Blockchain Risk Mitigation
- 14:45 – 17:00 Applications of a Blockchain

DAY 2

- 09:00 – 09:30 Recap Day 1
- 09:30 – 12:00 Applications of a Blockchain
 - Blockchain Use Case
 - First Generation Blockchain Technology
 - Blockchain Technology Supporting Businesses
 - Blockchain Applications Supporting People
- 12:00 – 12:45 Lunch break
- 12:45 – 14:45 Innovations in Blockchain Technology
- 14:45 – 17:00 Blockchain Getting started



**AN INTRODUCTION TO
BLOCKCHAIN**

COURSEWARE

Van Haren Publishing

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Key Learning Objectives

- By completing this chapter you will be able to:
 - Have a basic understanding of the change era we're in
 - Understand how Blockchain fits in this era
 - What changes blockchain will likely have on the way we do our daily tasks
 - An historical overview of blockchain development

4th Industrial revolution

“We are at the beginning of a revolution that is fundamentally changing the way we live, work, and relate to one another.

In its scale, scope and complexity, what I* consider to be the fourth industrial revolution is unlike anything humankind has experienced before”.

* Klaus Schwab Founder and Executive Chairman, World Economic Forum



4th Industrial revolution (cont.)

- **Velocity**
Contrary to the previous industrial revolutions, this one is evolving at an exponential rather than linear pace. This is the result of the multifaceted, deeply interconnected world we live in and the fact that new technology begets newer and ever more capable technology.
- **Breadth and depth**
It builds on the digital revolution and combines multiple technologies that are leading to unprecedented paradigm shifts in the economy, business, society, and individually. It is not only changing the “what” and the “how” of doing things but also “who” we are.
- **Systems Impact**
It involves the transformation of entire systems, across (and within) countries, companies, industries and society as a whole.

Great Horse Manure Crisis of 1894



The London Times predicted in 1849...
“In 50 years, every street in London will be buried under nine feet of manure.”

By 1912, this seemingly insurmountable problem had been resolved; in cities all around the globe, horses had been replaced and now motorized vehicles were the main source of transport and carriage.

History of blockchain

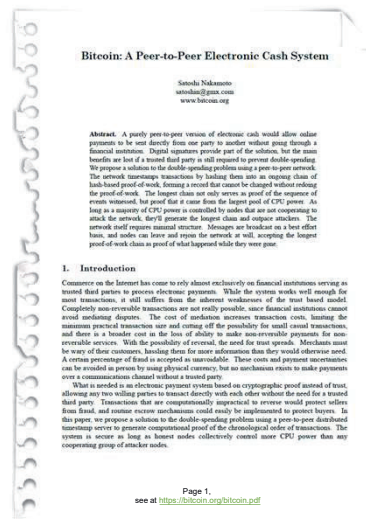
- Satoshi Nakamoto is the name used by the presumed pseudonymous person or persons who developed bitcoin, authored the bitcoin white paper, and created and deployed bitcoin's original reference implementation.



- As part of the implementation, Nakamoto also devised the first blockchain database.
- In the process, Nakamoto was the first to solve the double-spending problem for digital currency using a peer-to-peer network.
- Nakamoto was active in the development of bitcoin up until December 2010. Many people have claimed, or have been claimed, to be "Satoshi."

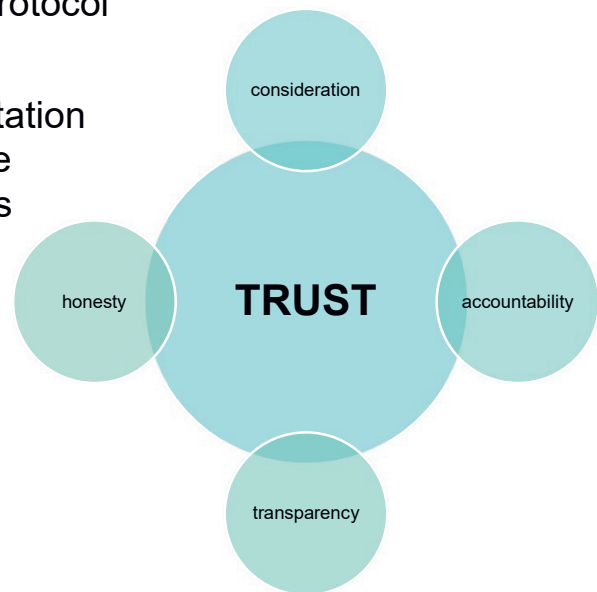
Satoshi Nakamoto's 7 design principles of the blockchain economy

1. Networked integrity
2. Distributed power
3. Value as incentive
4. Security
5. Privacy
6. Rights preserved
7. Inclusion



The trust Protocol

- Trust in business is the expectation that the other party will behave according to the four principles of integrity:
 - Honesty;
 - Consideration;
 - Accountability;
 - Transparency.



This definition was developed in Don Tapscott and David Ticoll, *The Naked Corporation* (New York: Free Press, 2003).

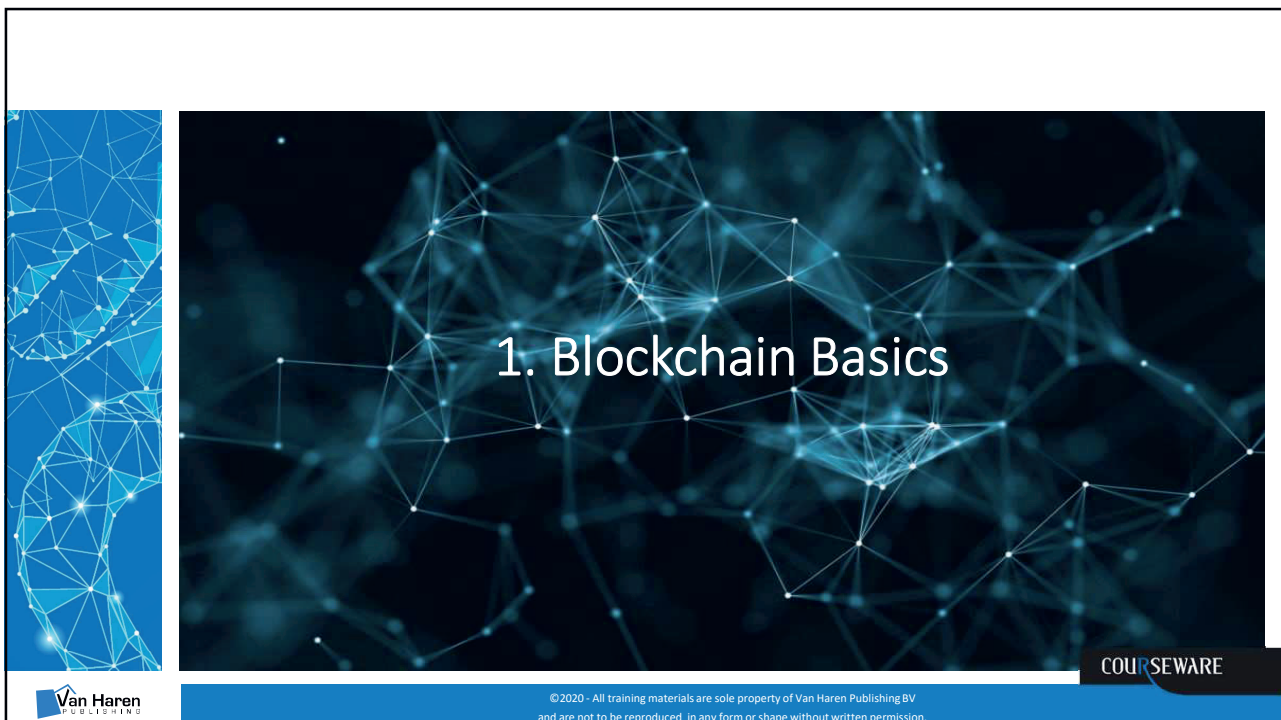
Summary

- An historical overview of blockchain development, the fourth revolution and setting the stage for the next modules to follow.



Exercise

- Explore the rise of blockchain in your own situation either personal and Business.
 - How will blockchain affect this?
 - How do you see Blockchain positioned in our society?
 - Et cetera.
-
- Take about 15 minutes to discuss in small teams and present your finding to the class (max 5 minutes)



1. Blockchain Basics

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1.1 BLOCKCHAIN TECHNOLOGY

Key Learning Objectives

- By completing this chapter you will be able to:
 - explain how a blockchain works. You can explain what a node is and you can identify the role of a node in a network. Also you can explain what tokens are and you can differentiate between public, private and hybrid blockchains;
 - explain how cryptography is used in a blockchain. You can explain how private, public keys and hashes are used in a blockchain. Also you can explain the purpose ledgers the role of mining in a blockchain;
 - recognize the types of consensus algorithms from a description and identify advantages and disadvantages of them.

Key Terms and Basic Concepts

This chapter 1.1

Blockchains

- Public blockchains
- Private blockchains
- Hybrid blockchains
- Permissioned blockchains

Node

- Full node
- Lightweight node

Tokens

Next chapter 1.2

- Consensus algorithm
- Cryptography
 - Private key
 - Public key
- Distributed ledger technology (DLT)
- Hash
- Mining

What is blockchain?

- A peer-to-peer distributed time-stamp server that holds a record of all transactions that have ever occurred on that network;
- Blockchain records and secures transactions in “blocks” that are “chained” together
- Once entries have been recorded in a block and chained to the previous block they are secured against changes via a consensus mechanism.

