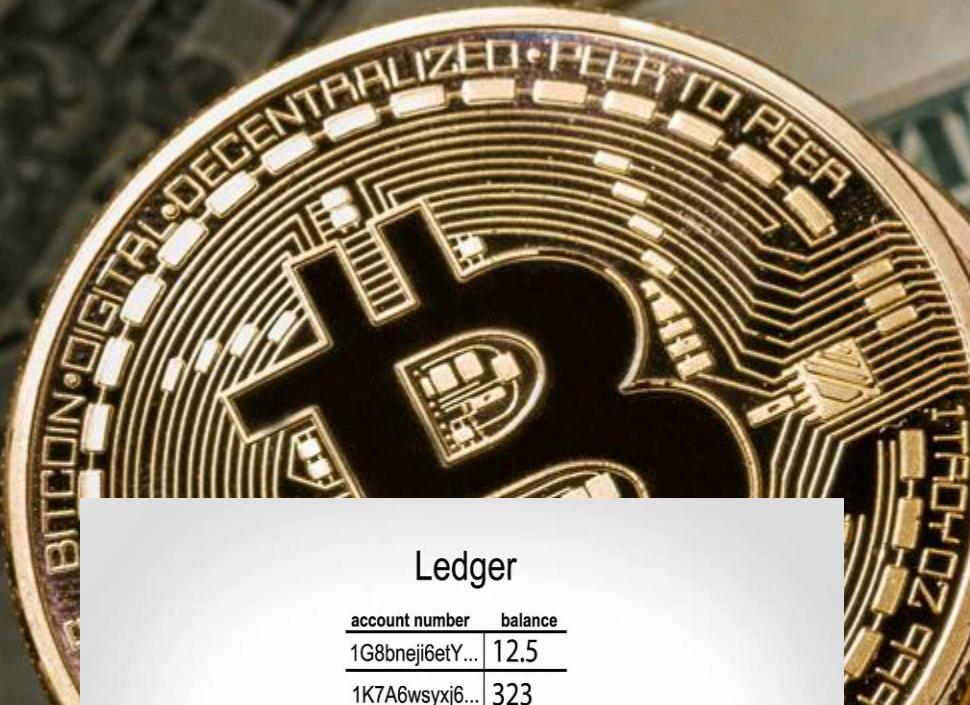


# 3 Protect Data

- Protecting the Security & Integrity of Data
- (3) Bitcoin Crypto Currency



Die teuerste Pizza der Welt ... (twitter.com/bitcoin\_pizza)

## 8. Crypto Currency Discussion of Opinions

# Bill Gates: Crypto Currencies are Cheaper



Bloomberg

STREET SMART

GATES FOUNDATION IS DONATING,  
INVESTING IN FINANCE FOR THE POOR

# Bill Gates: Crypto Currencies are Cheaper?

## Volkswirtschaftliche Kosten des Bargelds

in Mio. Euro



# **3 Protect Data**

## **- Protecting the Security & Integrity of Data**

### **Content:**

- 1. Motivation**
- 2. Data Integrity**
- 3. Bitcoin Crypto Currency**
- 4. Blockchain Technology**
- 5. Bitcoin Miner**
- 6. Smart Contracts**
- 7. IOTA**
- 8. Crypto Currency Opinions**
- 9. Summary**

# Cameron Winklevoss : Better than Gold?



# 3 Protect Data

## - Protecting the Security & Integrity of Data

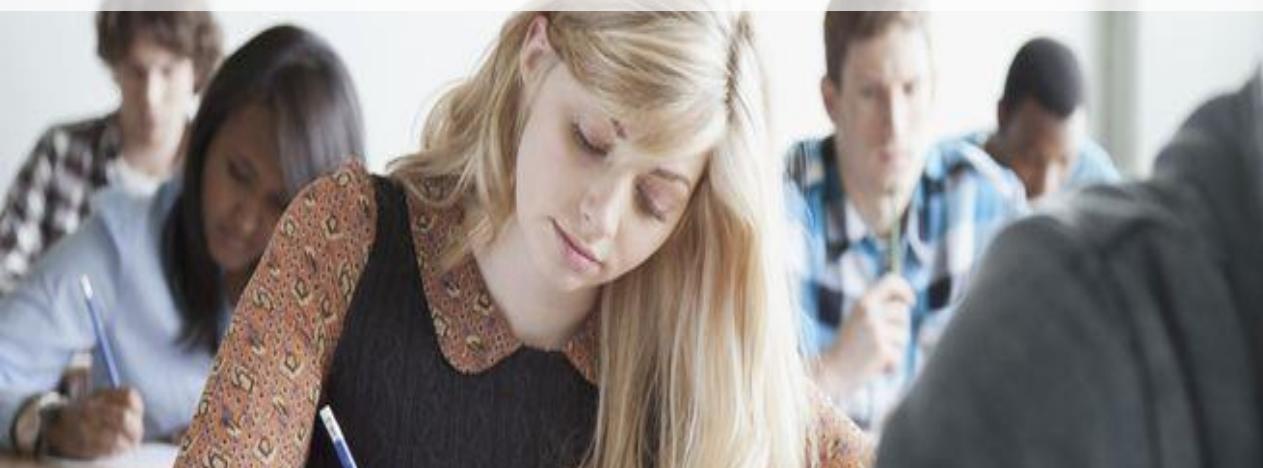
### Content:

1. Motivation
2. Data Integrity
3. Bitcoin Crypto Currency
4. Blockchain Technology
5. Bitcoin Miner
6. Smart Contracts
7. IOTA
8. Crypto Currency Discussions
9. Summary



- Data is the new **Gold**.
- Encryption is key to **Data Integrity**.
- Blockchain helps in **applications** with **no trust in networks**.
- **Crypto Currencies** are on the rise.

The ledger consists of a \_\_\_\_\_, each of which can store around 2,500 \_\_\_ per block.



- a) blockchain | transactions
- b) transaction | blockchains
- c) blockchain | bitcoins
- d) transaction | cryptocurrencies
- e) blockchain | cryptocurrencies

Art des Wissens Schwierigkeitsgrad	Abfragewissen (Vorlesung)	Anwendungswissen (Literatur)
Einfach		
Mittel		
Schwierig		

# What is not true about IOTA?



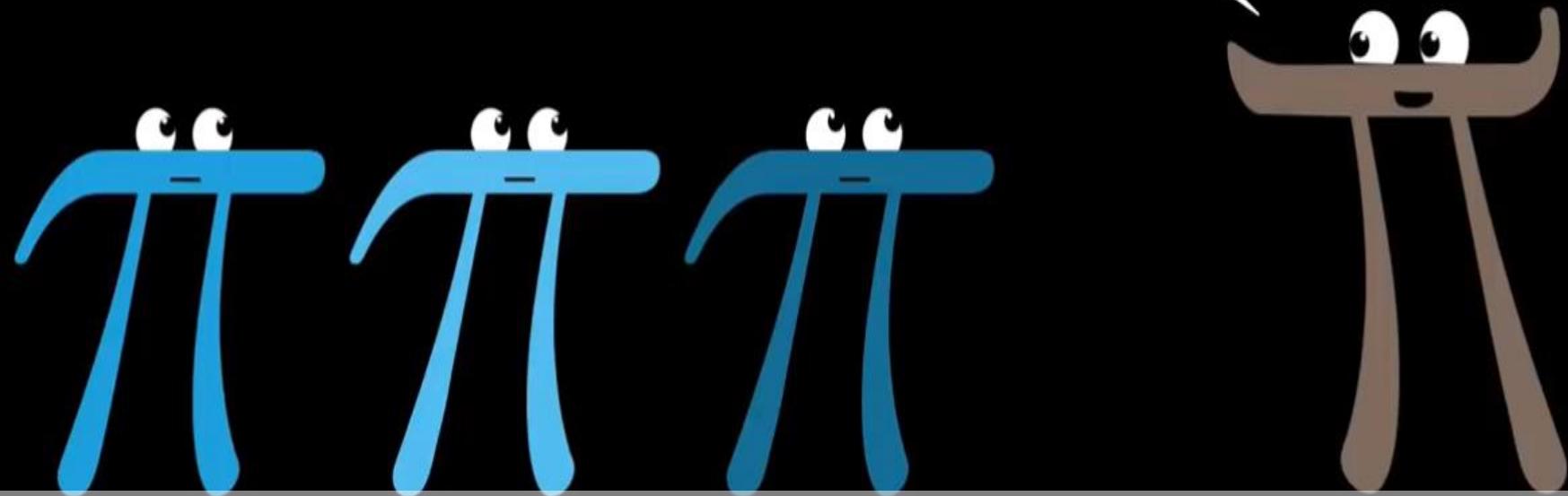
Schwierigkeitsgrad	Art des Wissens	Abfragewissen (Vorlesung)	Anwendungswissen (Literatur)
Einfach			
Mittel			
Schwierig			

- a) It uses blockchain as baseline technology.
- b) It is an open-source distributed ledger and cryptocurrency.
- c) It uses a directed acyclic graph technology.
- d) It focuses on providing secure communications and payments between machines (Internet of Things).
- e) IOAT's transactions are free and confirmation times are fast.

## 8. Crypto Currency Discussions



Digital  
signatures!



Ever wonder how Bitcoin (and other cryptocurrencies) actually work? <sup>27</sup>



### 3. Bitcoin A Crypto Currency

# **Michael Amberg**

## **Todays Content:**

- 1. Motivation**
- 2. Data Integrity**
- 3. Bitcoin Cryptocurrency**
- 4. Blockchain Technology**
- 5. Bitcoin Miner**
- 6. Smart Contracts**
- 7. IOTA**
- 8. Crypto Currency Discussions**
- 9. Summary**



# Math Puzzle: Finding a „Nonce“

## Ledger

Alice pays Bob 20 LD

Alice pays You 30 LD

Charlie pays You 100 LD

1073765433

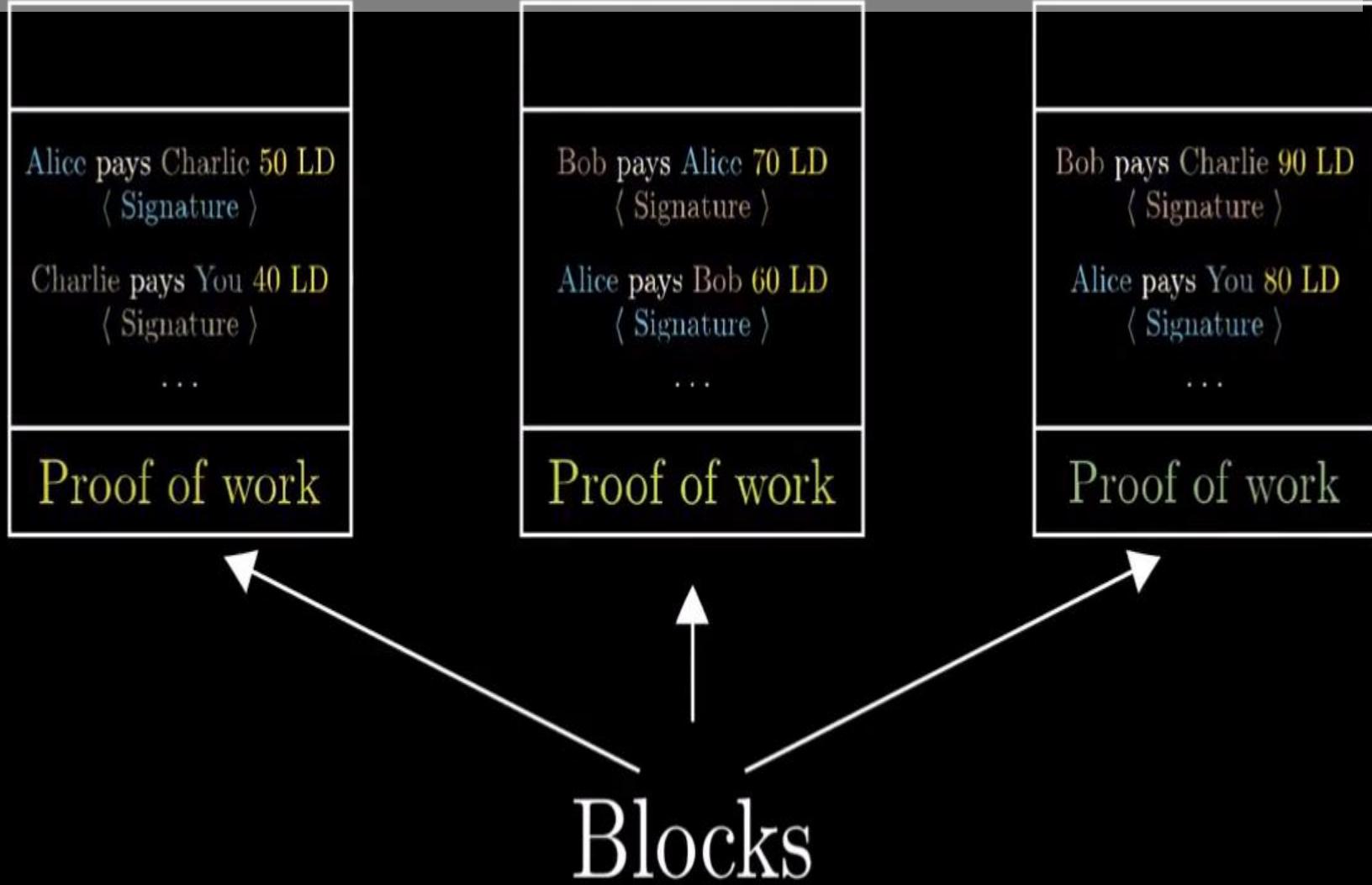
SHA256



30 zeros

0000000000000000000000000000000011  
00110001011011101100100100110110  
10000000010001100101101110100011  
1011111100111000110010010111000  
11011011101110010101101101000111  
00011110001000001000100110000110  
11100111000110100001100010010001  
10000101100010011010000101000000

# A Chain of Blocks (Blockchain) is harder to hack





Kenyan mines cryptocurrencies from his front room (12/2017)

The screenshot shows a user interface for a cloud mining service. On the left, a vertical sidebar lists navigation options: DASHBOARD (highlighted), MINING ALLOCATION, PAYOUTS, BONUS PAYOUTS, MY ACCOUNT, MY ORDERS, and BUY HASHPOWER. The main content area displays six mining metrics in a grid:

Currency	Hashrate
Bitcoin	66.4823 TH/s
Litecoin	13.0850 MH/s
Dash (X11)	1010.4750 MH/s
Ether	151.9875 MH/s
Zcash	0.0000 H/s
Monero	325.5000 H/s

At the bottom, there are two calls-to-action: "Mining Allocation" (Allocate your hashpower) and "Buy Hashpower" (Purchase more hashpower). The Windows taskbar at the bottom includes icons for search, file explorer, and various apps like Spotify and Google Chrome.

# How I Earn \$3500 Per Month Mining Cryptocurrency (7/2017)

# IOTA

(Acronym of Internet of Things & Tangle)

IOTA is an open-source **distributed ledger (cryptocurrency)** focused on providing **secure communications and payments between machines (Internet of Things)**.

IOTA uses **Directed Acyclic Graph (DAG / Tangle)** technology instead of the traditional **blockchain**.

IOTA's **transactions** are **free**, confirmation times are **fast**, the number of transactions the system can handle simultaneously is **unlimited**, and the system can **easily scale**.

[en.wikipedia.org/wiki/IOTA\\_\(technology\)](https://en.wikipedia.org/wiki/IOTA_(technology))

IOTA



IOTA

IOTA logo

## Denominations

### Superunit

$10^3$	Kilolota (Ki)
$10^6$	Megalota (Mi)
$10^9$	Gigalota (Gi)
$10^{12}$	Teralota (Ti)
$10^{15}$	Petalota (Pi)

Symbol	IOTA, MIOTA <sup>[1]</sup>
--------	----------------------------

## Demographics

Date of introduction	11 June 2016
----------------------	--------------

Source	Initial Coin Offering
--------	-----------------------

User(s)	Worldwide
---------	-----------

## Valuation

Supply growth	Fixed supply of 2,779,530,283,277,761 iota
---------------	--

**2015: IOTA was founded.** The fixed supply of **2,779,530,283,277,761 Iota** were created and distributed. As there is **no mining**, no more Iota will be created.

A few months later, IOTA began **open beta testing**.

**2016:** While beta testing continued, **trading** began **over-the-counter** between users for the next 11 months.

**2017:** IOTA announced a **\$10 million ecosystem fund** to **promote larger corporate collaborations, community projects, and developer acquisition initiatives**. IOTA was listed by its first **exchange**: Bitfinex.

As of **autumn 2020**, the **market capitalization** of IOTA is **\$750 million**, making it the **27th largest cryptocurrency** in circulation.