

Brief Introduction to Blockchain and its Implications for Oregon

Oregon State Legislature

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Recent PhD



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The Blockchain Will Do to the Financial System What the Internet Did to Media

Harvard Business Review, March 2017



How The Blockchain Will Transform Everything From Banking To Government To Our Identities

Forbes, May 2016

THE LAWYER

Advancing the business of law

The fourth industrial revolution: blockchain and smart contracts

What are blockchains?

To understand blockchains, let's start with website and email...

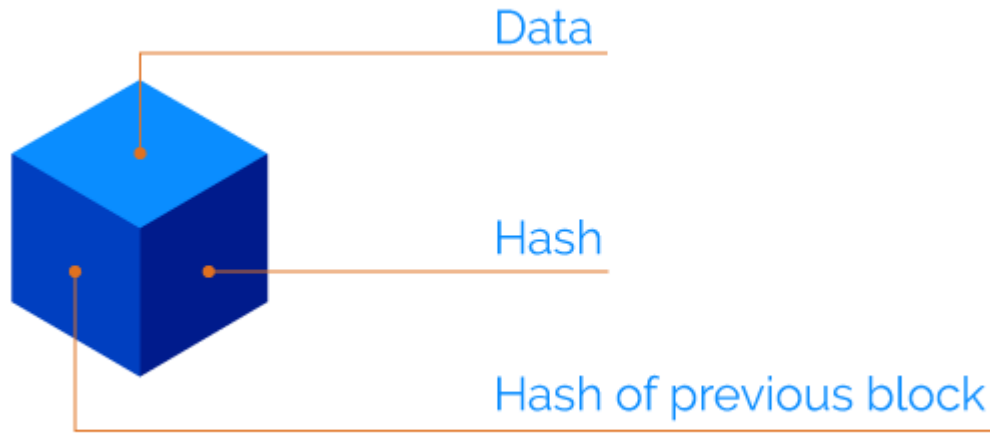


Impact of New Technology

<u>Protocol*</u>	<u>Rails for:</u>	<u>Impact</u>
HTTP (websites)	Content	Advertising/News
SMTP (email)	Messages	Communications

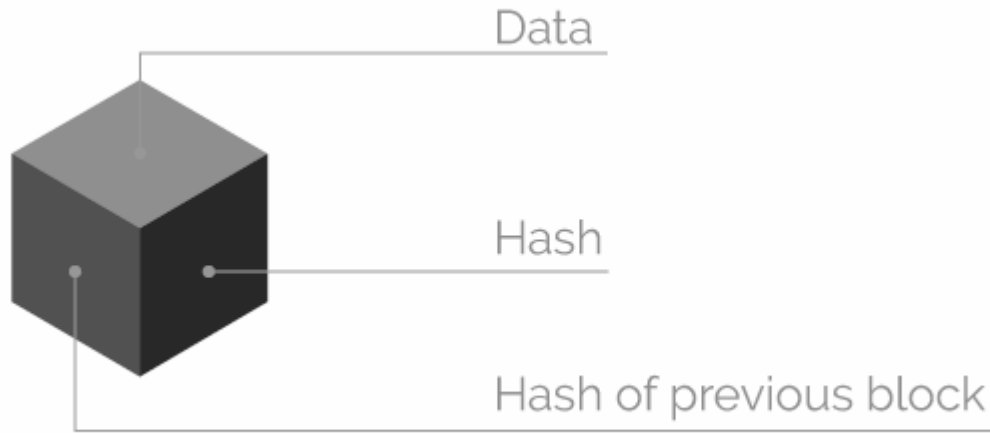
*These technologies began at the “protocol level” (ARPANET, HTTP; SMTP)--the infrastructure level and no one really used it back in 1982 when it was first invented.

What are blockchains?



“Blocks” are a package of data

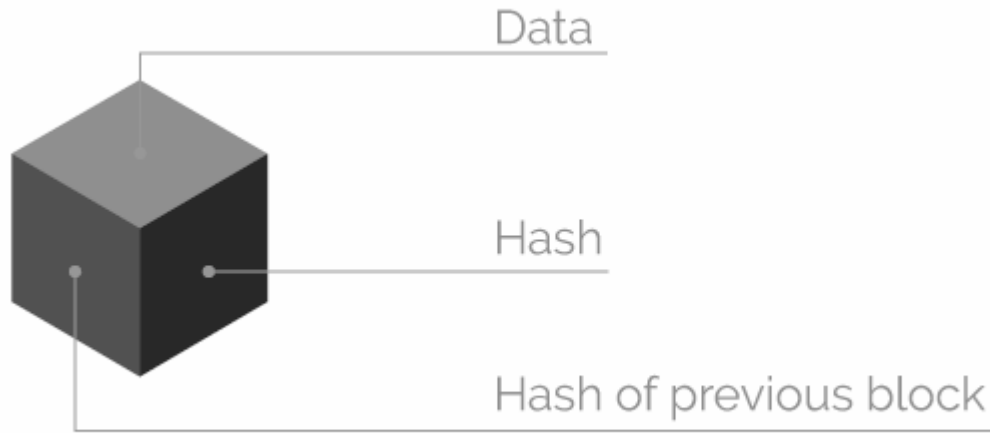
What are blockchains?



A hash is a secure digital fingerprint generated via cryptography



What are blockchains?



“the **blockchain**” is a sequential ledger of data entries that’s auditable and time-stamped



Impact of New Technology

<u>Protocol*</u>	<u>Rails for:</u>	
<u>Impact</u>		
HTTP (websites)	Content	Advertising
SMTP (email)	Messages	Communications
Blockchains	Trusted	Personal
Health Data		Data
Food Safety		
Financial Data		

Implications for Oregon

Tremendous Job Growth

TOP EMERGING JOBS IN 2018
LINKEDIN

LinkedIn

- BLOCKCHAIN DEVELOPER
- MACHINE LEARNING ENGINEER
- APPLICATION SALES EXECUTIVE
- MACHINE LEARNING SPECIALIST
- PROFESSIONAL MEDICAL REP.

YAHOO! FINANCE

LINKEDIN RELEASES 2018 U.S. EMERGING JOBS REPORT

The newly released [LinkedIn 2018 U.S. Emerging Job Report](#) reveals that blockchain developer has been by far the fastest-growing job from 2014 to today. **The demand for blockchain developers has grown by an astounding 3,300%**, nearly three times more than machine learning engineer, the No. 2 job on the list, followed by consulting and accounting firms.

Education Initiatives - High Education

U of Oregon
earns \$1MN
funding for
blockchain
research

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University of Oregon gets funding from cryptocurrency outfit

Originally published June 7, 2018 at 2:07 pm | Updated June 7, 2018 at 2:46 pm



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Exclusive: Leading cryptocurrency exchange to open Portland office, 70-plus jobs possible 🔑



LO3 ENERGY

Technology September 13, 2018

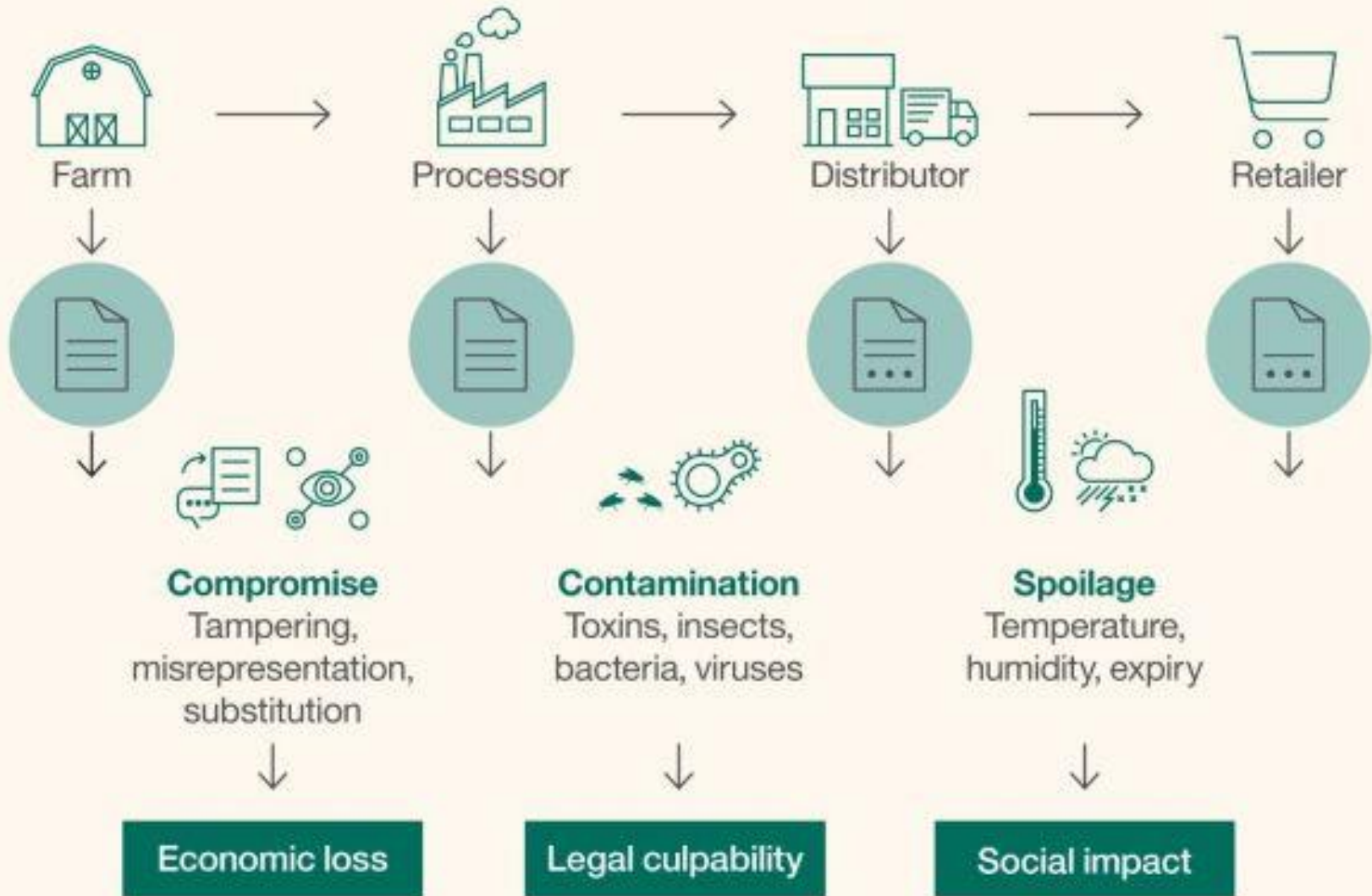
Nike, Intel, R/GA part of new program to put Oregon at center of blockchain industry

Venture capitalists say blockchain, a distributed ledger technology, will transform business as we know it. Portland seeks a leading role in that revolution.

A partnership backed by [R/GA Ventures](#), Nike, OHSU, Intel, Oregon's economic development agency Business Oregon and blockchain research firm [Smith & Crown](#), is taking shape this month. The venture studio, based in Portland's Pearl district, aims to attract out-of-state blockchain leaders to apply the emerging technology to business and policy conundrums.



Business Applications: Safety and Traceability:



Blockchain retail asset tracking will hit \$4.5 billion by 2023, according to Juniper Research.

Considerations for Legislature

Government Initiatives: Examples

- [Delaware Blockchain Initiative](#), a comprehensive program intended to spur adoption and development of blockchain and smart contract technologies in both private and public sectors in the state.
- [Illinois Blockchain Initiative](#), which calls for a consortium of state and county agencies to “collaborate to explore innovations presented by Blockchain and distributed ledger technology...to transform the delivery of public and private services, redefine the relationship between government and the citizen in terms of data sharing, transparency and trust, and make a leading contribution to the State’s digital transformation.”
- West Virginia, for example, will pilot test a blockchain-based platform for [mobile voting](#) in the upcoming 2018 primary elections.

Government Applications: Examples

- Identity and Access Management
- Voting Systems
- Regulatory Compliance and Audit
- Asset Management and Registration
- Health Records
- Processing Tax Payments
- Government Payments and Social Services
- Civic Participation
- Transit and Smart City Infrastructure

Regulatory Approaches

- **Learning via Task Force**
 - To interact with Oregon constituents and businesses
 - To learn from other states re: scope of regulation
- Providing guidance
- Sandboxing to encourage experimentation
- Proposing new legislation

Questions

Blockchain State Regulation

- Securities law
- Tax law
- Money transmission
- Government uses of blockchain
- Data standards

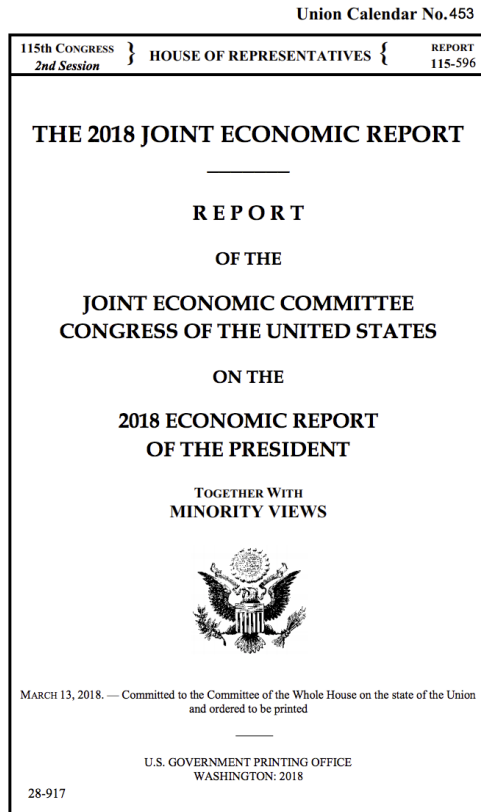


uniform law commission

better laws. stronger states.

<https://www.uniformlaws.org/>

Blockchain State Regulation



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CHAPTER 9: BUILDING A SECURE FUTURE, ONE BLOCKCHAIN AT A TIME

- The *Report* estimates the substantial direct costs and longer-term indirect loss incurred to the economy and critical infrastructure from cyberattacks and threats. The *Report* suggests blockchain as a potential tool for securing America's digital infrastructure.
- Blockchain technology—providing cybersecurity and many other potential benefits—broke into the mainstream in 2017 driven by widespread interest and surging valuations in digital currencies such as Bitcoin and Ethereum.
- These new innovations and markets presented America's regulatory and legislative institutions with unique challenges as well as technology that could revolutionize the world's digital landscape and economy.



Source: The 2018 Joint Economic Report, Joint Economic Committee, Congress of the U.S.

State money transmission statutes

The following states are unlikely to currently regulate virtual currency sales under state money transmission statutes:

CA, ID, IL, KS, LA, MD, MO, MT, NH, NC, TN, TX, WI and WY.

The following states are likely to regulate virtual currency sales under state money transmission statutes:

AL, CT, HI, NY, VT, and WA.

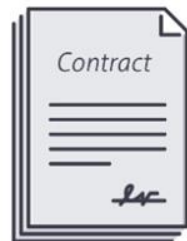
The remaining states (AK, AZ, AR, CO, DC, DE, FL, GA, IN, IA, KY, ME, MA, MI, MN, MS, NE, NV, NJ, NM, ND, OH, OK, OR, PA, RI, SC, SD, UT, WV) have not yet weighed in on the issue.

Source: [github.com/LawDEX/50-State Survey of the Regulation of Token Sales under State MTAs/](https://github.com/LawDEX/50-State-Survey-of-the-Regulation-of-Token-Sales-under-State-MTAs/)

What are Smart Contracts?

The basic idea behind smart contracts is that many kinds of contractual clauses can be embedded in our hardware and software, and make breach of contract expensive for the breacher.

Examples: collateral, bonding, delineation of property rights, etc.



Resources

- Brookings Institute: Blockchain and U.S. state governments: An initial assessment, 2018
- The 2018 Joint Economic Report, Joint Economic Committee, U.S. Congress.
<https://www.congress.gov/115/crpt/hrpt596/CRPT-115hrpt596.pdf>
- Yiannas, Frank, Testimony before the United States House Committee on Science, Space and Technology, Subcommittee on Oversight & Subcommittee on Research and Technology on “Beyond Bitcoin: Emerging Applications for Blockchain Technology,” February 14, 2018, p. 3-5.
<http://docs.house.gov/meetings/SY/SY21/20180214/106862/HHRG-115-SY21-Wstate-YiannasF-20180214.pdf>.
- “BlockCypher And U.S. Department Of Energy’s National Renewable Energy Laboratory To Provide Blockchain Agnostic Distributed Energy Solution, January 23, 2018,
<http://www.prweb.com/releases/2018/01/prweb15117801.htm>.
- O’Leary, Rachel Rose, “Congressional Group Pushes for Blockchain Security Standards,” CoinDesk, August 22, 2017, <https://www.coindesk.com/congressional-blockchain-group-pushes-medicalsecurity-standards/>.
- <https://bitlegal.io/>
- 50-State Survey of the Regulation of Token Sales under State MTAs.
<https://github.com/LawDEX/LawDEX/tree/master/50-State%20Survey%20of%20the%20Regulation%20of%20Token%20Sales%20under%20State%20MTAs>