

What Lawyers Need to Know About Blockchains for Business

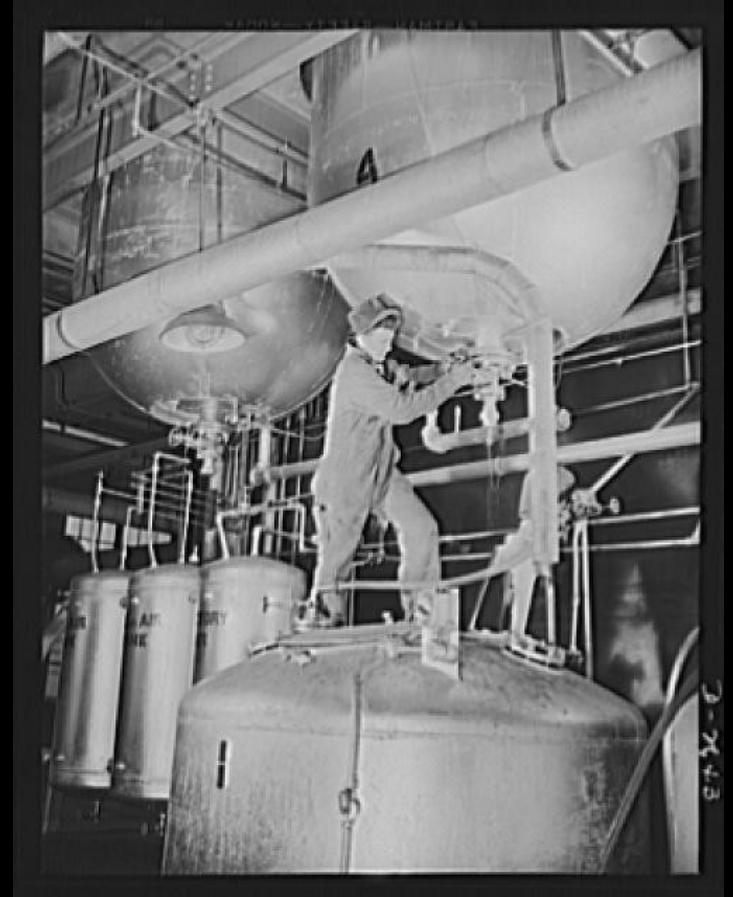
Ronald Chichester, Esq.
Essentials of Business Law
Houston, Texas
March 8, 2018

What makes a blockchain?
What does a blockchain do?
What are applications for
business?
Laws: Old and New
What do lawyers need to know?



What Makes a Blockchain?

- Blend of 3 Technologies
 - Peer-to-Peer Network
 - Encryption
 - Game Theory



The idea is...

to substitute Middle*men*

for a Middle*thing*

What's so cool about that?

Blockchains
Facilitate
Automation

Blockchains
Institutionalize
Automation

- Pros

- Highly reliable
 - Few points of failure
- Rules set in software
 - Rules are set *a priori*
- Audits are automated
- No FLOAT
- Low cost of entry

- Cons

- **MUST** protect cryptographic keys
- Software may have flaws
- MUST maintain access to the peer-to-peer network
 - Moderately vulnerable to DDoS attacks

dvf / blockchain

Watch 215

Star 2,441

Fork 768

Code

Issues 7

Pull requests 8

Projects 0

Insights

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A simple Blockchain In Python

blockchain

cryptocurrency

bitcoin

python

flask

58 commits

5 branches

0 releases

11 contributors

MIT

Branch: master

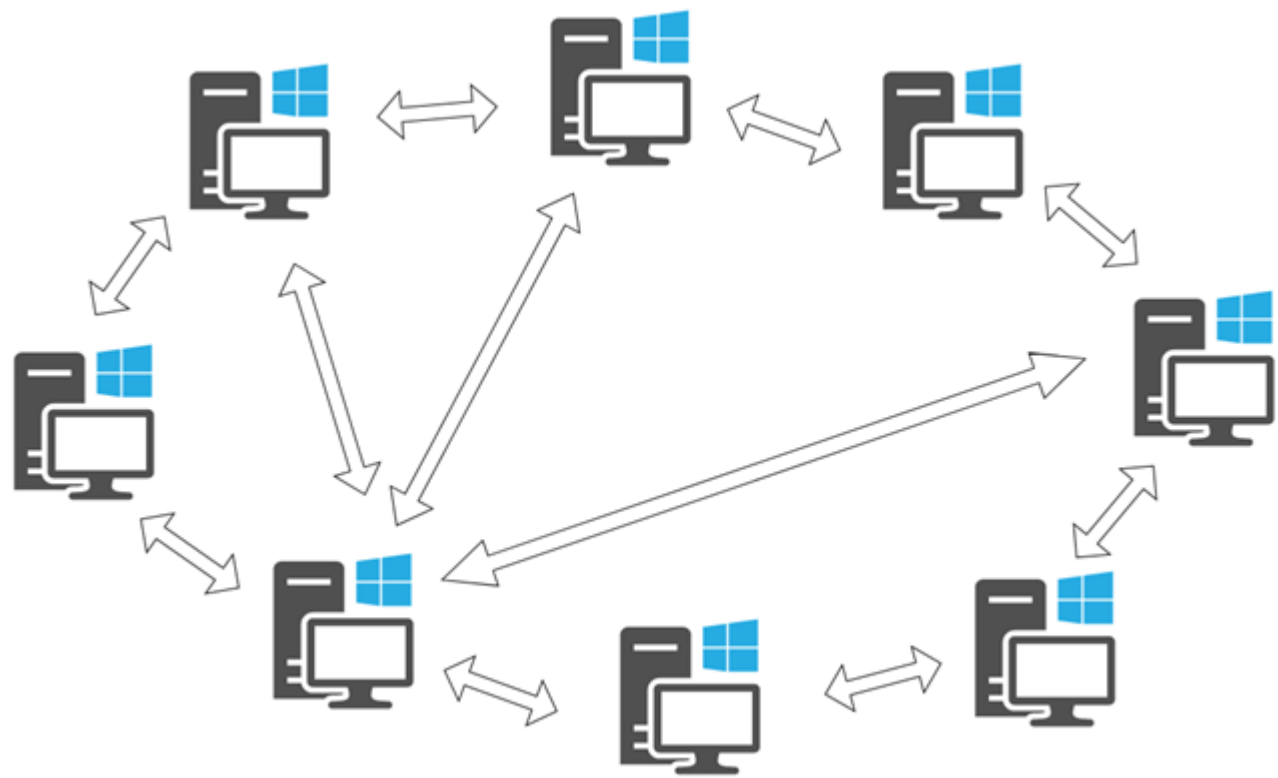
New pull request

Find file

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Game Theory

Lays the Foundation for the Rules

To Get Everyone Moving in the
Right Direction

What Does a Blockchain Do?

Blockchains

Record

Things

The **Records** are always

Immutable

and

Irrefutable

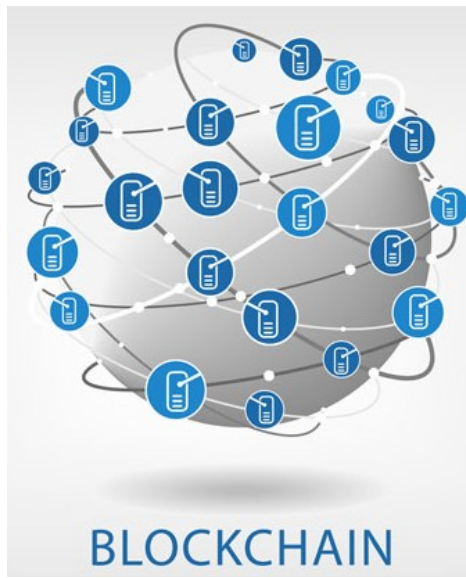
The **Things** are always

Digitized Information



bit

unit of *Information*



Data



Transactions



Cryptocurrencies

Instructions



Software



Smart Contracts

Smart Contract Example



Smart Contract Example

```
pragma solidity ^0.4.21;

contract Coin {
    // The keyword "public" makes those variables
    // readable from outside.
    address public minter;
    mapping (address => uint) public balances;

    // Events allow light clients to react on
    // changes efficiently.
    event Sent(address from, address to, uint amount);

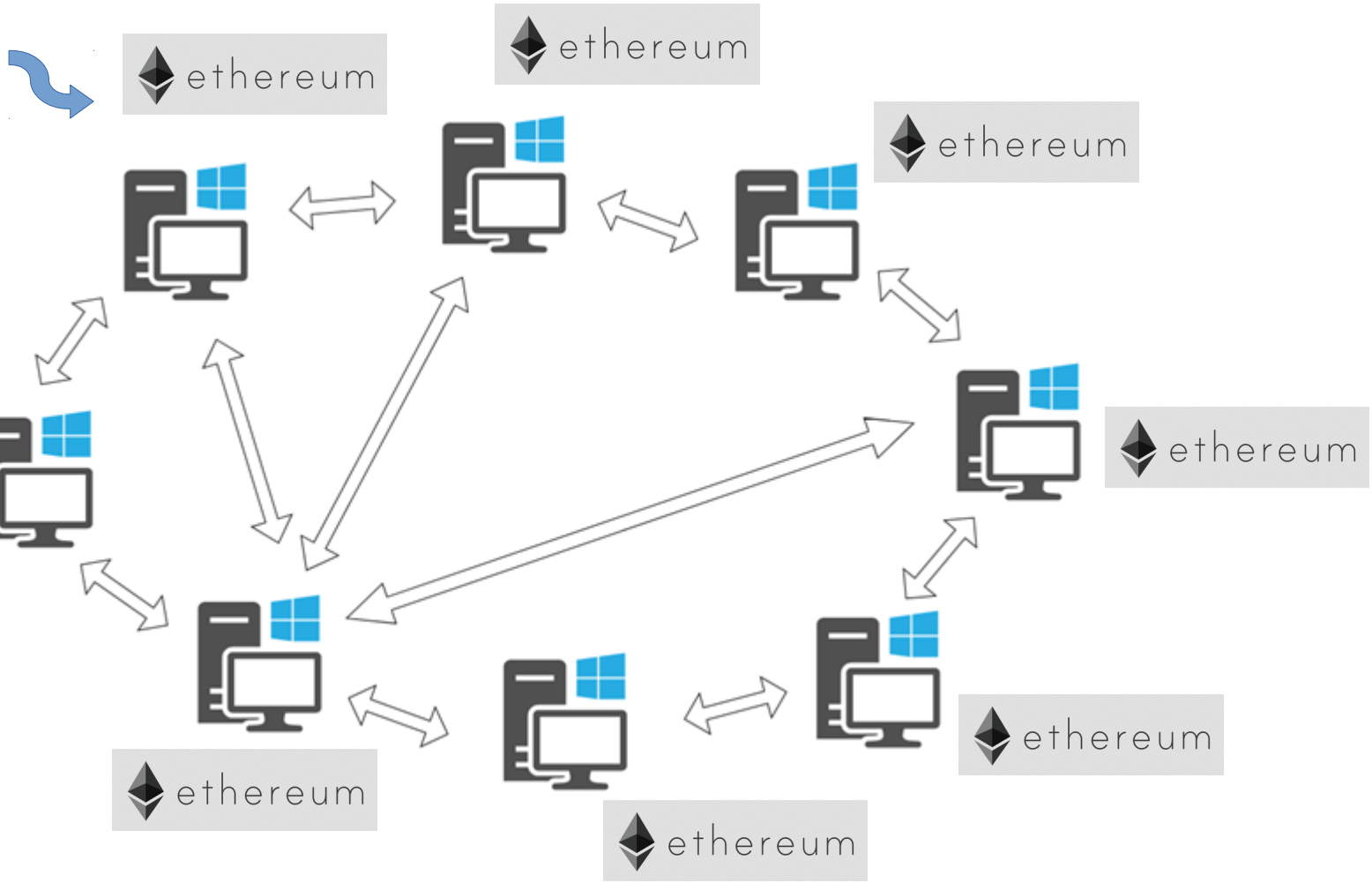
    // This is the constructor whose code is
    // run only when the contract is created.
    function Coin() public {
        minter = msg.sender;
    }

    function mint(address receiver, uint amount) public {
        if (msg.sender != minter) return;
        balances[receiver] += amount;
    }

    function send(address receiver, uint amount) public {
        if (balances[msg.sender] < amount) return;
        balances[msg.sender] -= amount;
        balances[receiver] += amount;
        emit Sent(msg.sender, receiver, amount);
    }
}
```

```
pragma solidity ^0.4.21;
```

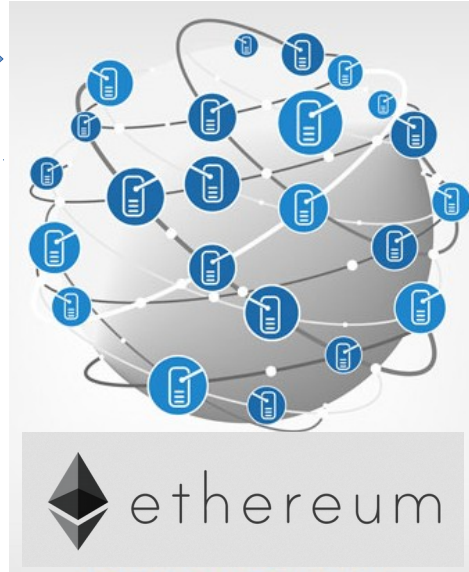
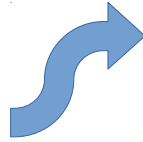
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    emit Sent(msg.sender, receiver, amount);  
  }  
}
```



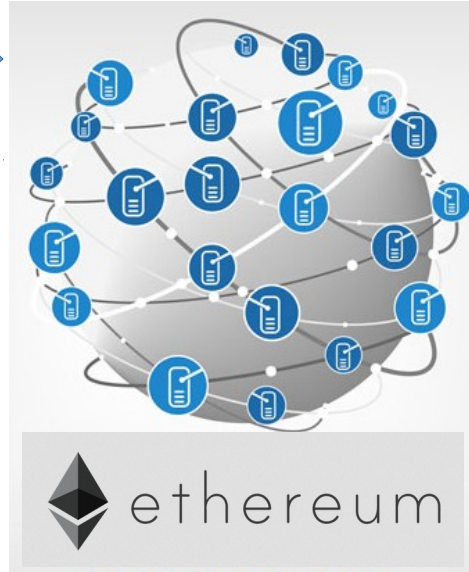
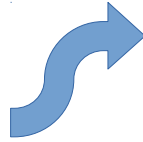
Smart Contract Example



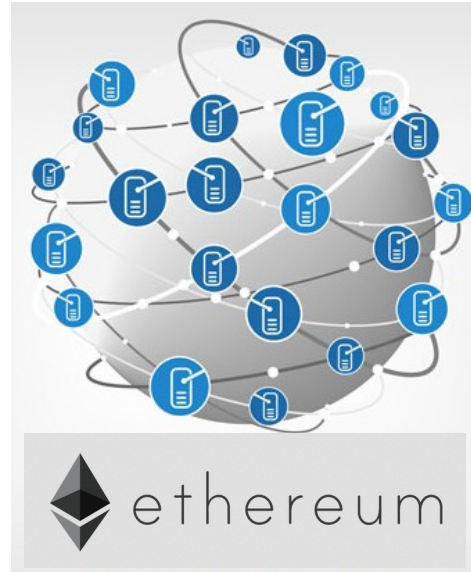
Smart Contract Example



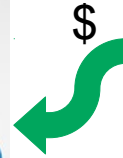
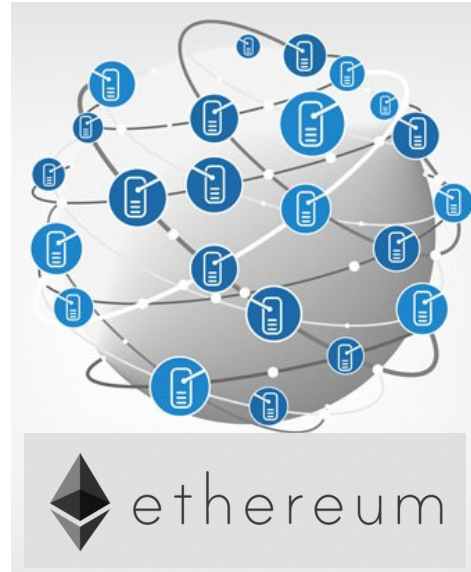
Smart Contract Example



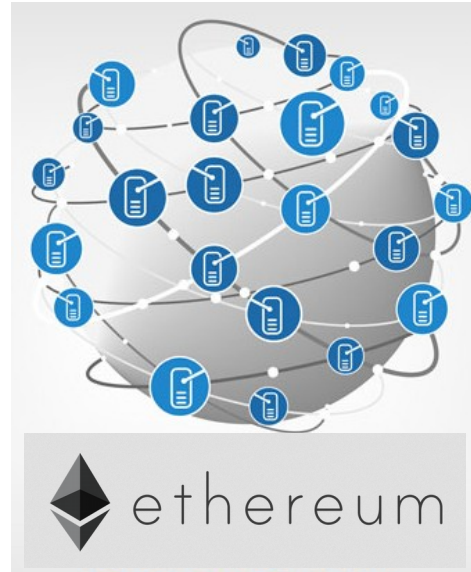
Smart Contract Example



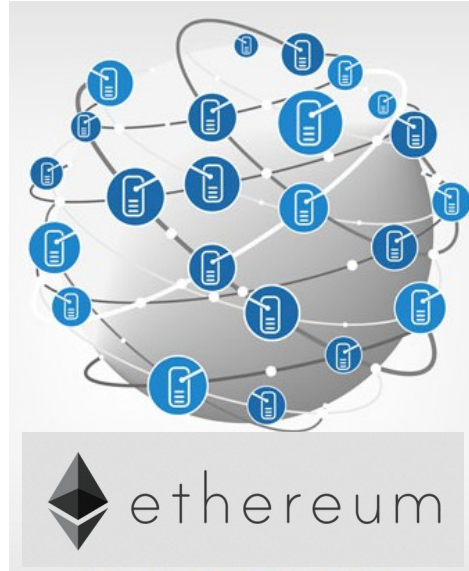
Smart Contract Example



Smart Contract Example



Smart Contract Example





ASCP

**PLAY
MUSIC**

LICENSED



(Nexus of) Smart Contracts

+

Artificial Intelligence

=

Distributed Autonomous Organization
(aka a Digital Corporation)

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AI finds novel way to beat classic Q*bert Atari video game

🕒 1 March 2018



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The White House says it could exclude some countries from a plan to impose tariffs on metals for a time.

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🕒 9 minutes ago

Features

Training Feedforward Neural Networks Using Genetic Algorithms

David J. Montana and Lawrence Davis
BBN Systems and Technologies Corp.
10 Mouton St.
Cambridge, MA 02138

Abstract

Multilayered feedforward neural networks possess a number of properties which make them particularly suited to complex pattern classification problems. However, their application to some real-world problems has been hampered by the lack of a training algorithm which reliably finds a nearly globally optimal set of weights in a relatively short time. Genetic algorithms are a class of optimization procedures which are good at exploring a large and complex space in an intelligent way to find values close to the global optimum. Hence, they are well suited to the problem of training feedforward networks. In this paper, we describe a set of experiments performed on data from a sonar image classification problem. These experiments both 1) illustrate the improvements gained by using a ge-

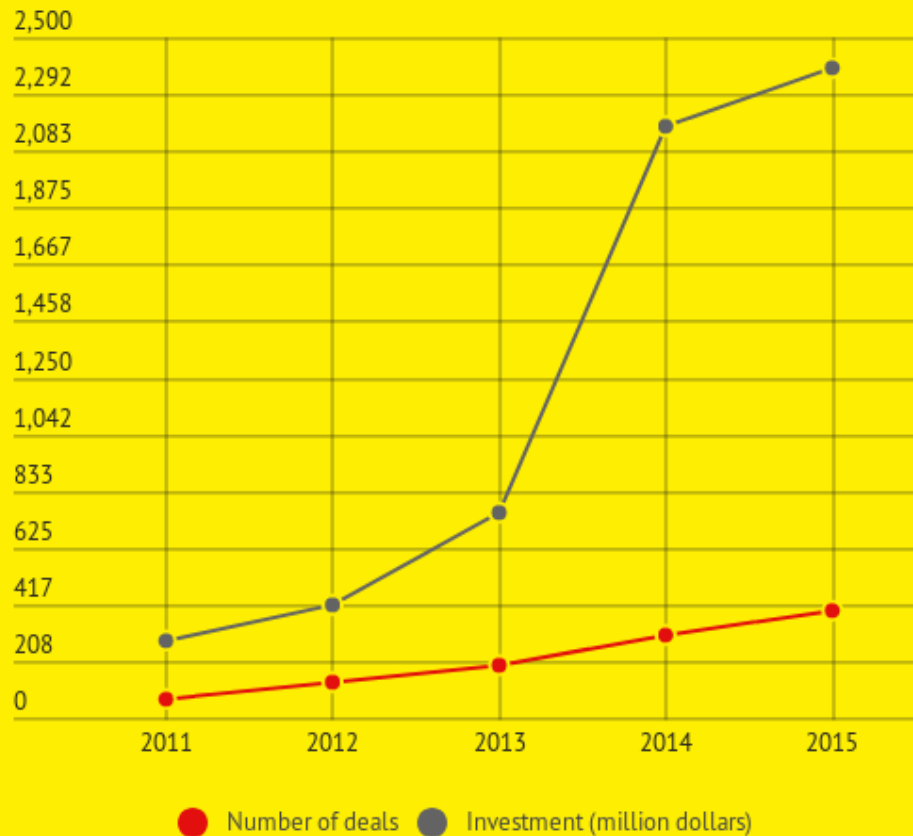
Section 6 describes the experiments we ran and analyzes their results. Section 7 provides conclusions about our work and suggestions for future work.

2 Neural Networks

Neural networks are algorithms for optimization and learning based loosely on concepts inspired by research into the nature of the brain. They generally consist of five components:

1. A directed graph known as the network topology whose arcs we refer to as links.
2. A state variable associated with each node.
3. A real-valued weight associated with each link.
4. A real-valued bias associated with each node.
5. A transfer function for each node which determines the

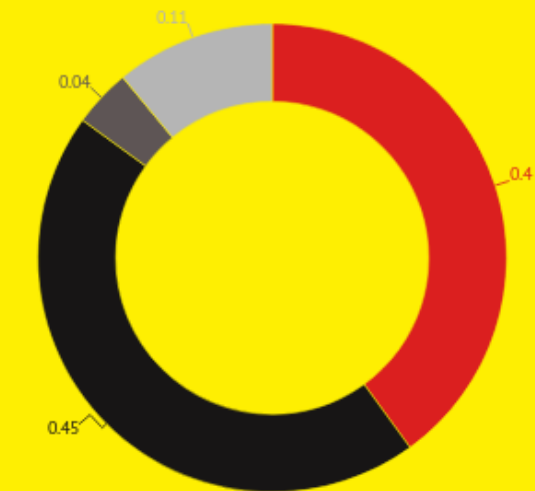
GLOBAL YEARLY FINANCING IN AI



Share

infogram

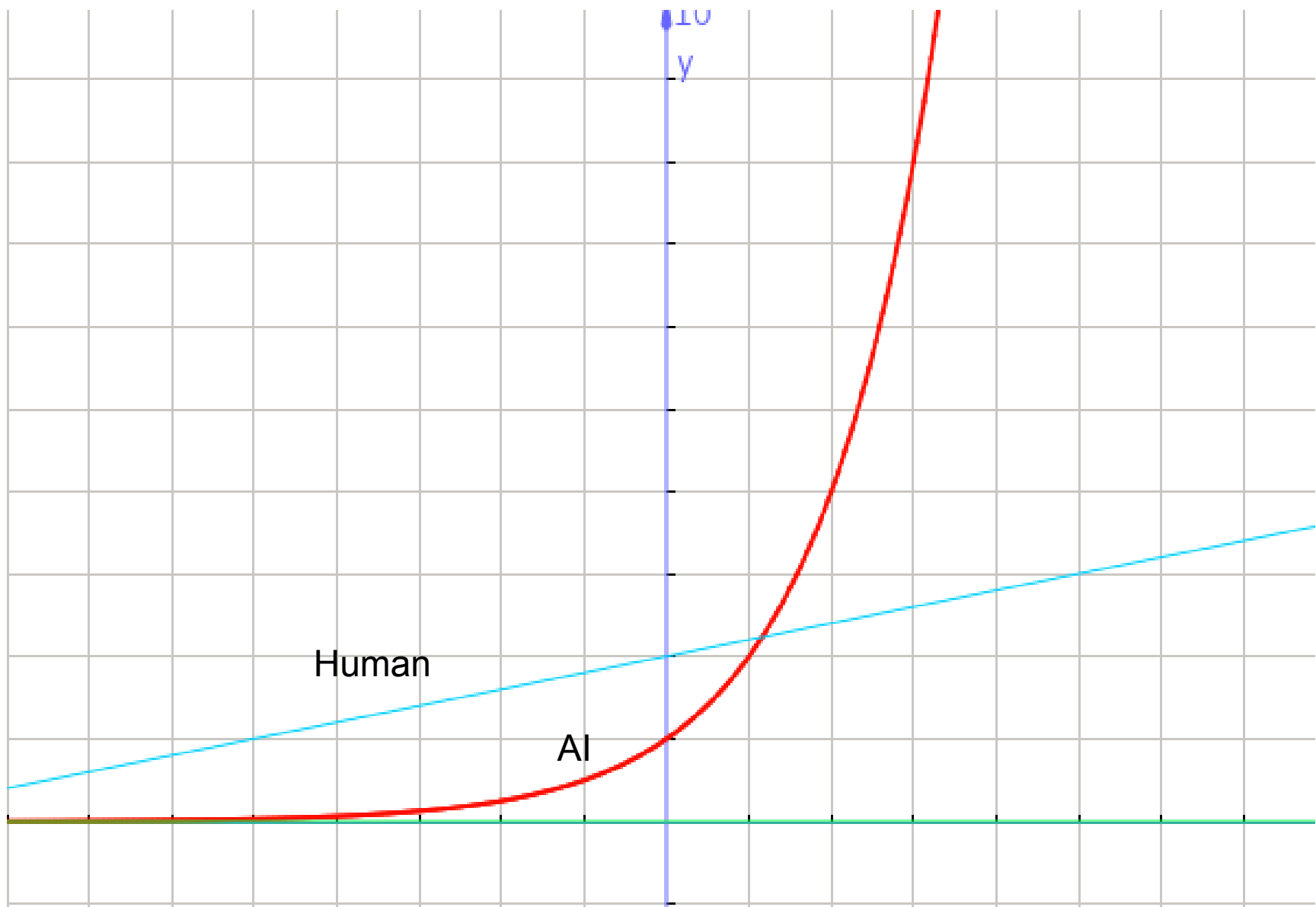
HOW WILL AI IMPACT YOUR COMPANY'S WORKFORCE IN 5 YEARS? (% OF CMOS)

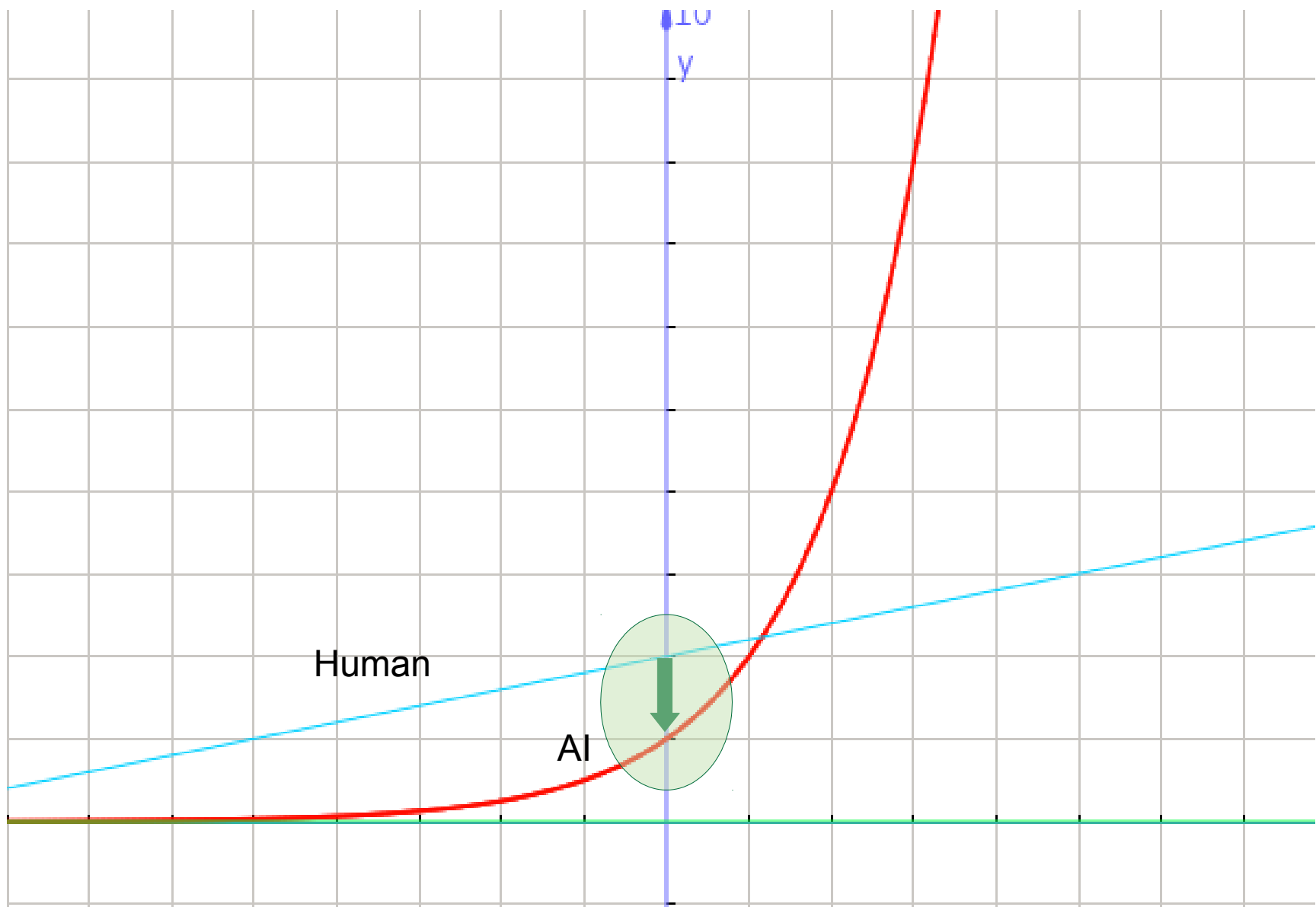


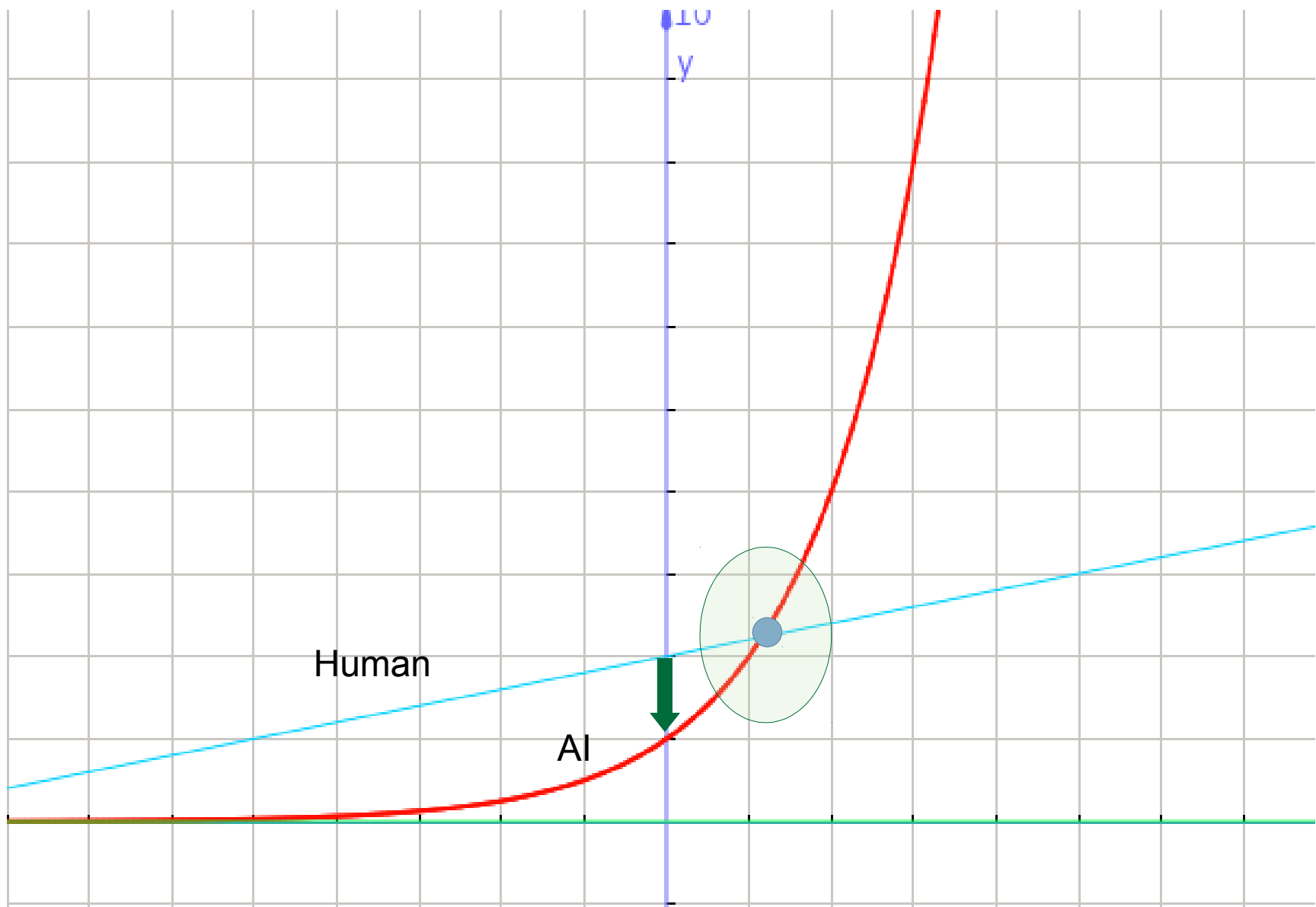
- AI will require workers with vastly different skills or abilities
- AI will result in a reduction in the overall number of jobs
- AI will result in an increase in the overall number of jobs
- AI will have no impact on our workforce or number of jobs

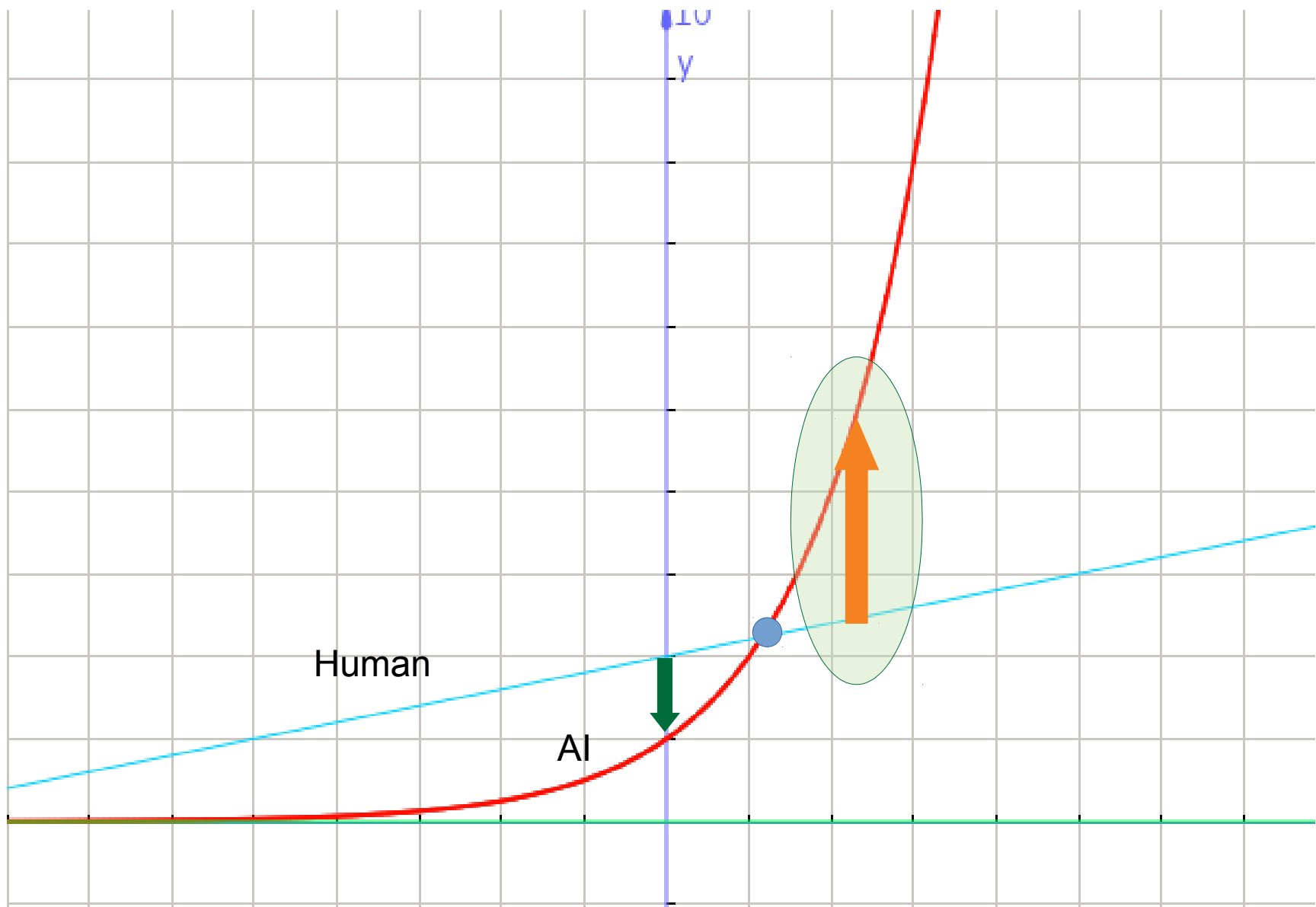
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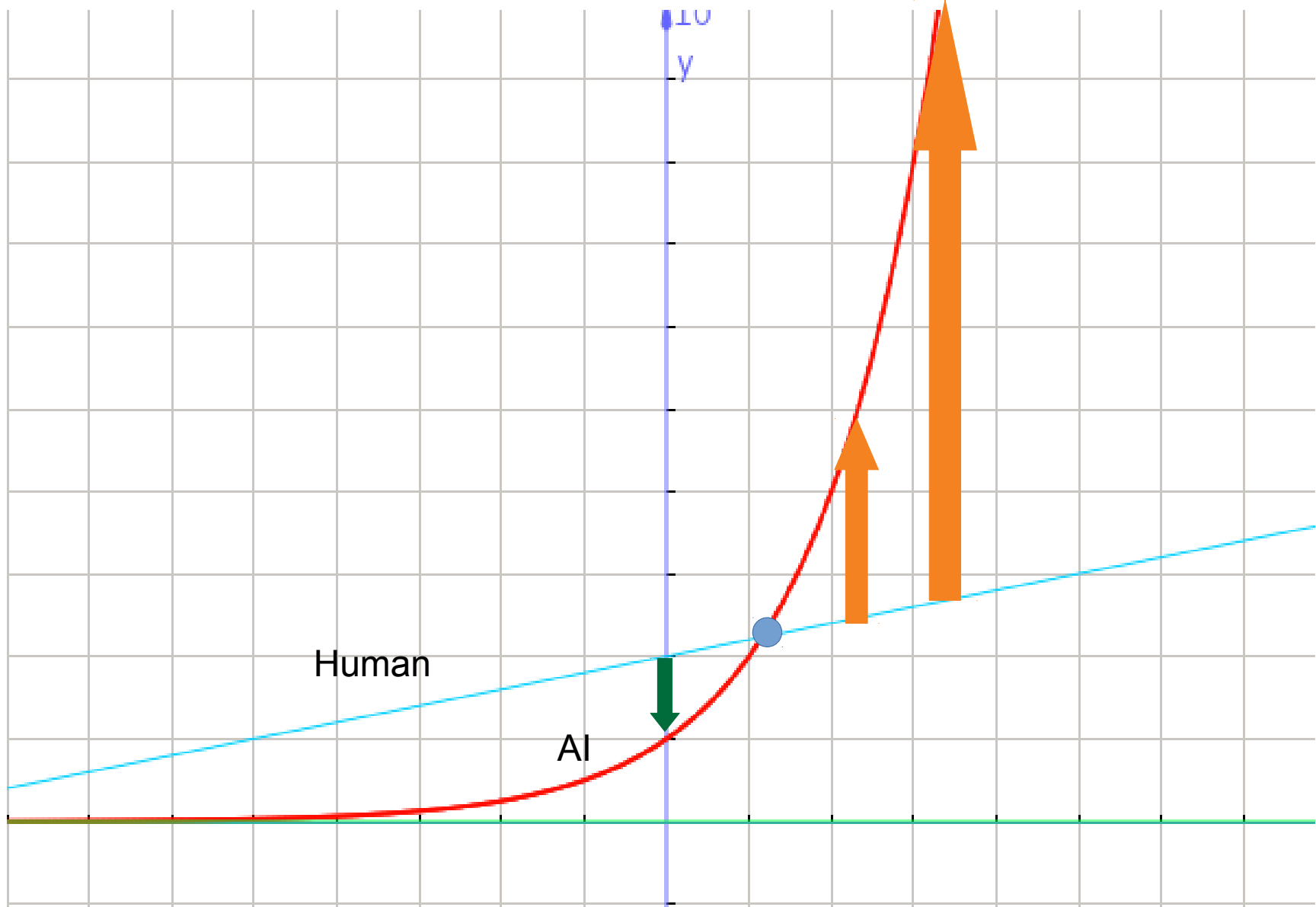
infogram











“Quantity has a quality all its own”

– Eubulides

Iron Rule

Law Lags Technology

What are the Business Applications?

Business Applications

Cryptocurrencies

Contract / Regulatory Compliance

Digital Contracts

Digital Corporations

Business Applications

General Ledger

Corporate Governance

Stock Purchases

Shareholder Tracking

Pretty Much *Every* Business Activity

Laws: Old and New

The Old: Potential Problems

Texas Department of Banking's Supervisory
Memorandum – 1037

UETA / E-SIGN

Banking Regulations on
Virtual Currencies in Other States

The New: Recent Changes

Delaware SB 69

Arizona HB 2417

Nevada SB 398

Washington SB 5031

Vermont HB 182

The New: Recent Changes

IRS Guidelines on Virtual Currencies
(IR-2014-36)

SEC Taking Action on ICO's

The New: Recent Changes

CFTC v. McDonnell (E.D.N.Y. 2018)

(Virtual currencies are a commodity,
and are subject to regulation by the
Commodity Futures Trading
Commission).

The Future: Upcoming Changes

The Uniform Regulation of Virtual Currency Business Act

(National Conference of Commissioners
on Uniform State Laws)

What Do Lawyers Need to Know?

What Do Lawyers Need to Know?

- Blockchains are not hype. They are here to stay.
- UETA / E-Sign can mess up blockchain initiatives
- Clients can set up their own cryptocurrencies.
- Beware of the money transaction laws (some are felonies). Section 151 of the Finance Code.
- Beware of ICO's or things that *look* like ICO's

What Do Lawyers Need to Know?

- Smart Contracts and DAO's complicate jurisdiction
- Have to figure out how a digital corporation can sue and be sued
- Have to figure what type of agent can be constituted from artificial intelligence (and can that agent be negligent)

The law is in the
early stages of development

Questions?



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