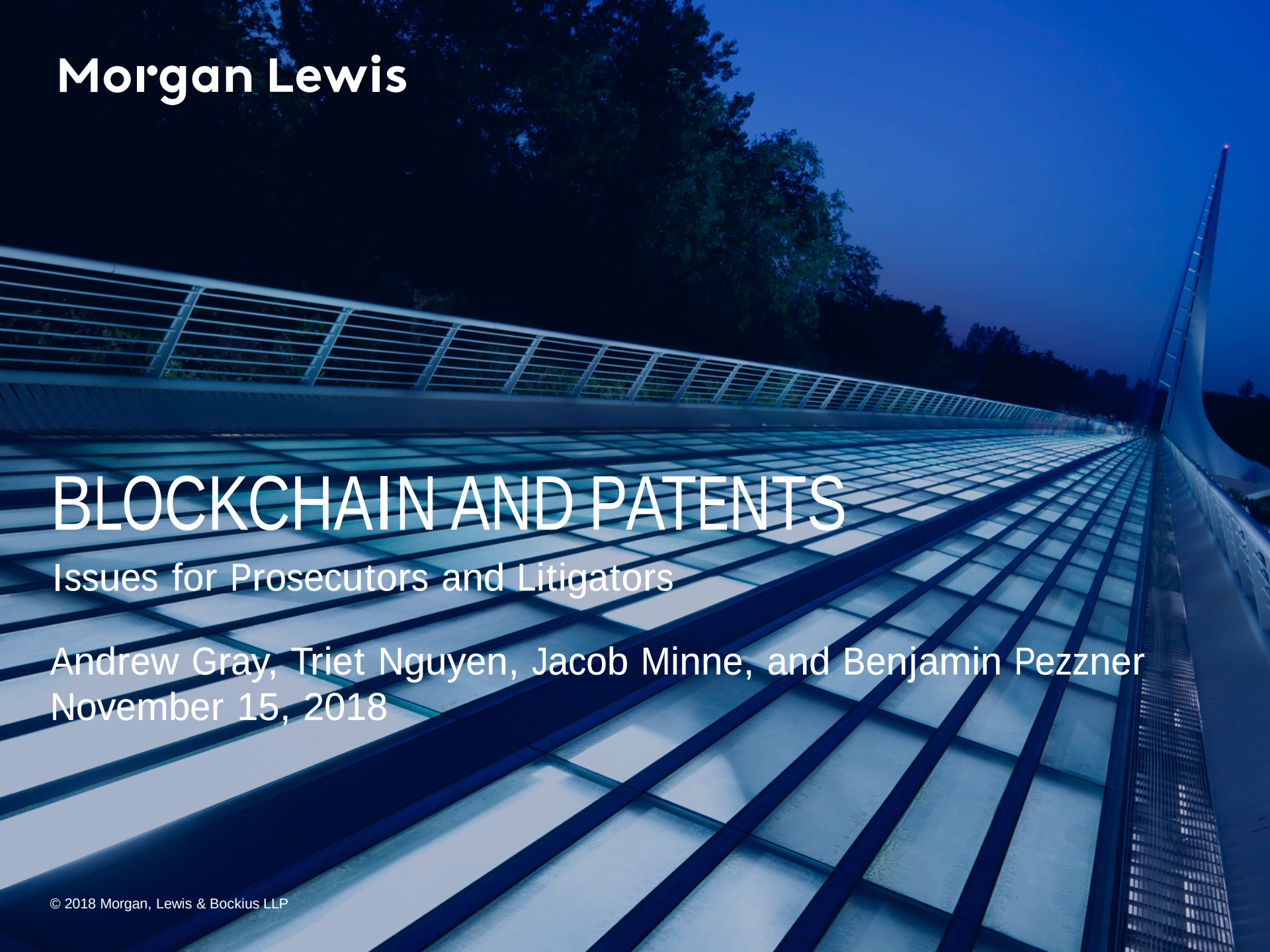

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BLOCKCHAIN AND PATENTS

Issues for Prosecutors and Litigators

Andrew Gray, Triet Nguyen, Jacob Minne, and Benjamin Pezzner

November 15, 2018

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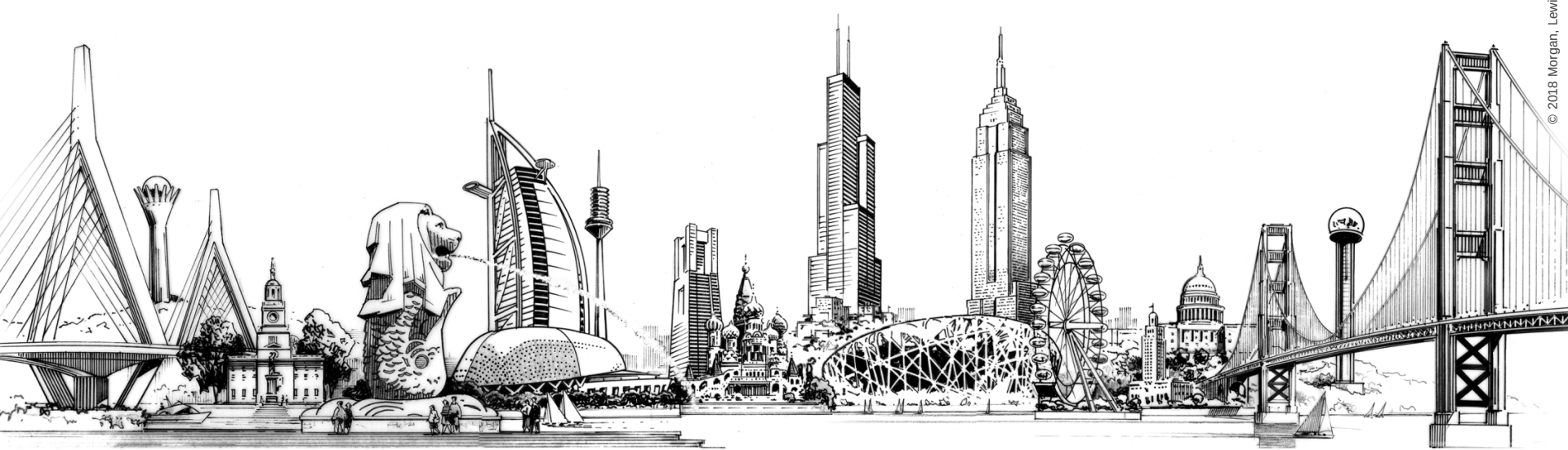
BLOCKCHAIN & PATENTS

Introduction



Blockchain:

- a distributed ledger network
- using public-key cryptography to cryptographically sign transactions
- that are stored on a distributed ledger,
- with the ledger consisting of cryptographically linked blocks of transactions.
  - The cryptographically linked blocks of transactions form what is known as “a blockchain.”

Unlikely to be foundational blockchain patent:

- A nine-page white paper titled “Bitcoin: A Peer-to-Peer Electronic Cash System,” describing the concept of a blockchain, was published under the pseudonym Satoshi Nakamoto in 2008 to “The Cryptography Mailing List.”
- Nakamoto did not apply for a patent on the concept of a blockchain described in that paper.
- Someone claiming to be Nakamoto — an Australian CS professor named Craig Wright — has filed 73 blockchain patent applications in the United Kingdom.
  - Why the UK?
  - Why announce these applications rather than wait for them to issue or publish?

Blockchain Patents???

- Because core blockchain technology is already part of the public domain, only novel and non-obvious variations can be patented.
- Putting aside the questions of patent eligibility and obviousness, patent filings are increasing roughly three-fold each year:
  - 282 issued patents and 1258 published patent applications (blockchain or bitcoin or “distributed ledger”).
- Competition is building for patents that go beyond bitcoin and cover inventions that support a distributed public ledger.

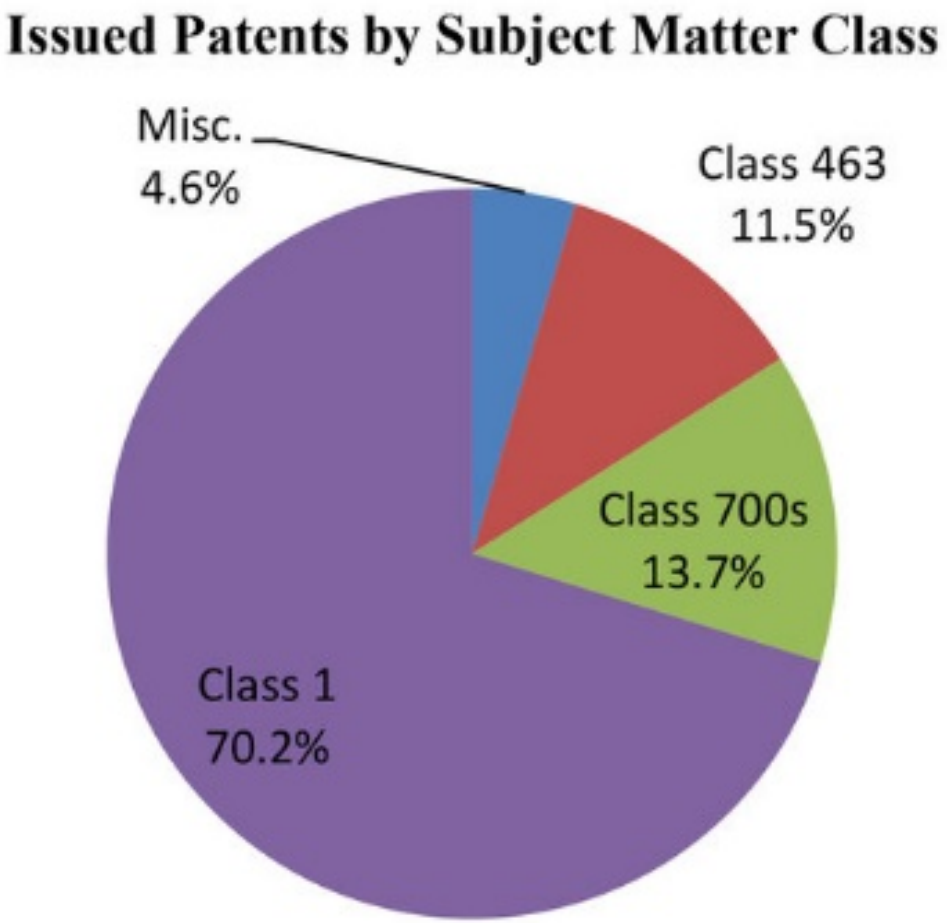
Exemplary Blockchain Patent Titles

- 9,825,931 - System for tracking and validation of an entity in a process data network
- 9,825,765 - Method for distributed trust authentication
- 9,824,540 - Method and system for gaming revenue
- 9,824,408 - Browser payment request API
- 9,824,222 - Method of distributed discovery of vulnerabilities in applications
- 9,824,031 - Efficient clearinghouse transactions with trusted and un-trusted entities
- 9,820,120 - Mobile security technology
- 9,818,116 - Systems and methods for detecting relations between unknown merchants and merchants with a known connection to fraud
- 9,818,109 - User generated autonomous digital token system

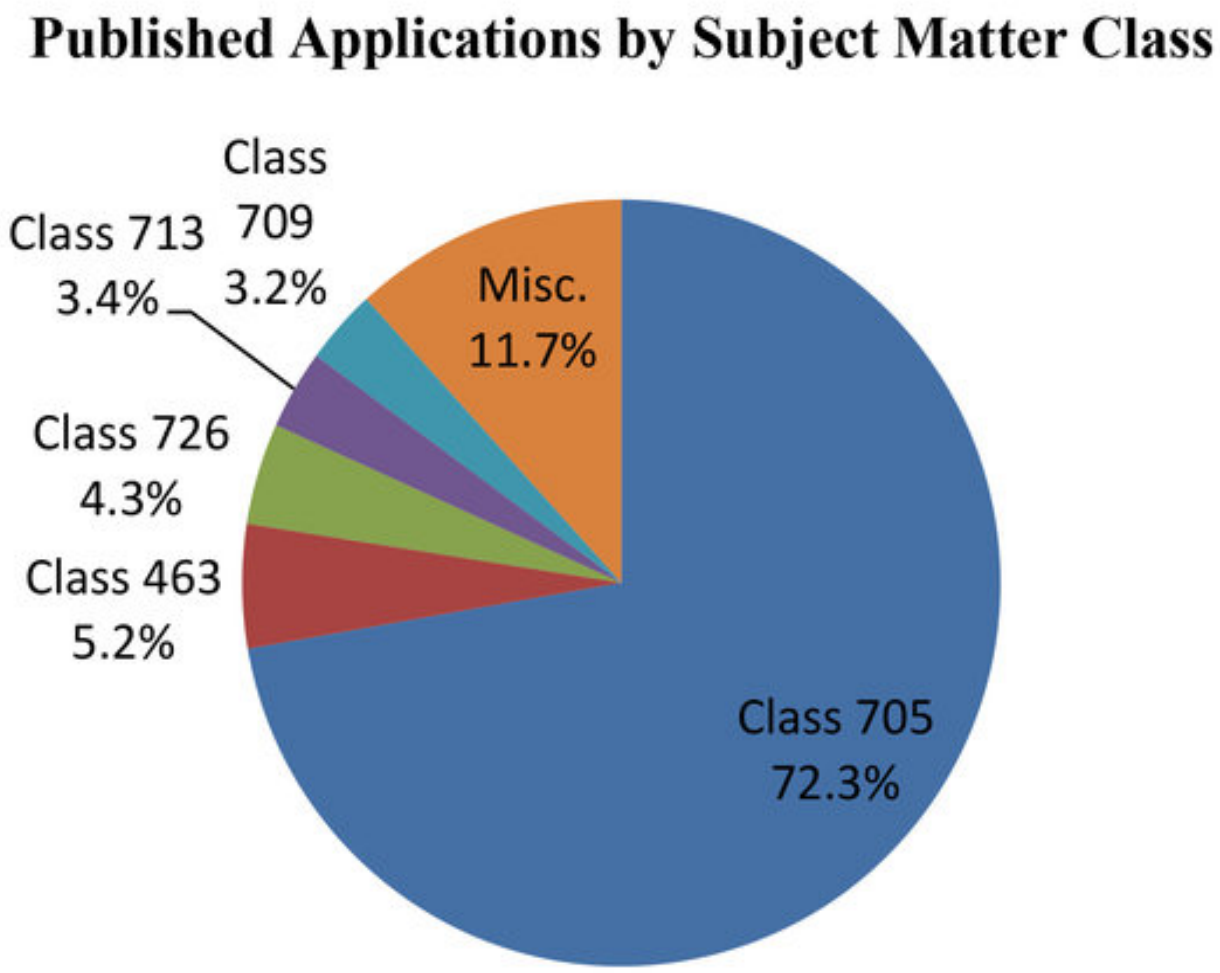
Exemplary Blockchain Patent Titles (con't)

- 9,818,098 - Systems and methods for facilitating payments via a peer-to-peer protocol
- 9,818,092 - System and method for executing financial transactions
- 9,815,191 - Methods and systems for food preparation in a robotic cooking kitchen
- 9,813,770 - Method and system for generation and playback of supplemented videos
- 9,811,981 - Games of chance
- 9,807,106 - Mitigating blockchain attack
- 9,805,381 - Crowd-based scores for food from measurements of affective response
- 9,800,517 - Secure distributed computing using containers
- 9,800,514 - Prioritizing data packets in a network

Blockchain Patents:



Blockchain Patent Applications



Blockchain Patent Filers

- Financial Institutions
  - Bank of America
  - Goldman Sachs
  - MasterCard
  - Visa
  - Wells Fargo
- Tech Companies
  - Amazon
  - Apple
  - Facebook
  - Dell
  - IBM
- Blockchain-Focused Startups
  - Coinbase
  - Coinlab
  - Chain
  - 21 Inc.

Open Source Blockchain

- Core blockchain technology is unpatented.
- The non-profit Linux Foundation has formed the Hyperledger Project to create an open-source standard for distributed ledgers. The founding members include:
  - technology companies (such as Oracle, Intel and Cisco)
  - integrators (such as IBM and Accenture)
  - financial institutions (such as J.P. Morgan and Wells Fargo)
  - pure-play blockchain companies (such as Ripple and Blockstream).
- Notable blockchain players that have made their software open-source are:
  - Ethereum (smart contracts)
  - block.one (commercial applications)
  - Chain (enterprise-grade blockchain infrastructure)
  - Digital Asset Holdings (financial applications).

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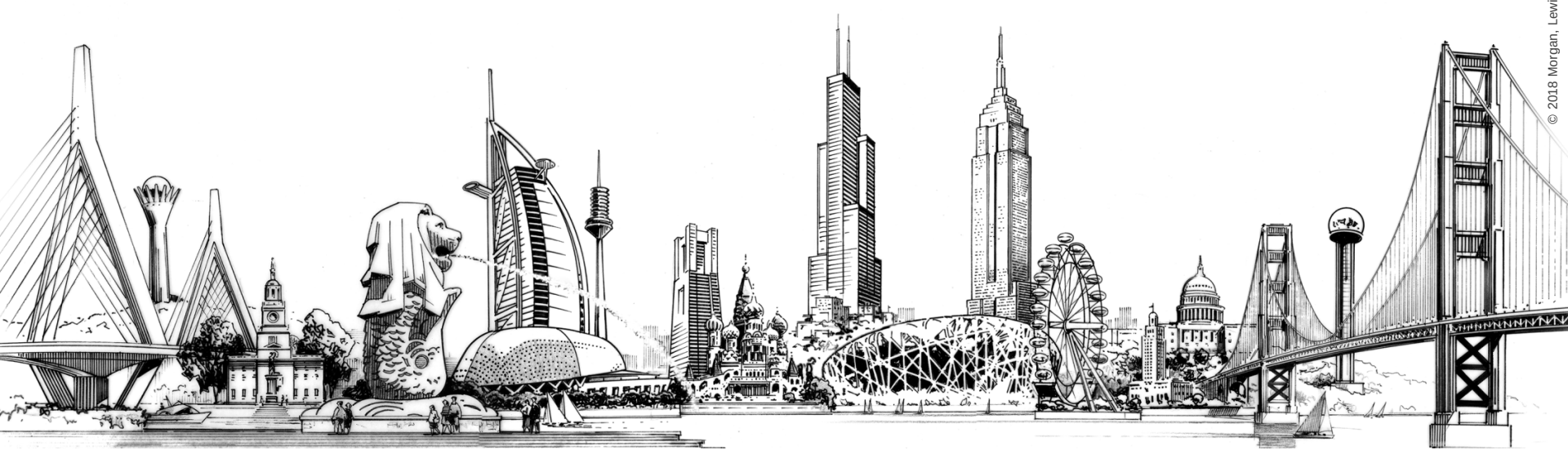
BLOCKCHAIN & PATENTS

An Overview Of Prosecution Strategies



Prior Art and Other Prosecution Issues

Agenda

1) Patent Strategy Issues
   - whether to pursue patents at all
   - balancing prosecution with open source

2) Prior Art
   - sources of prior art
   - examiner strategies

3) Potential Changes in the Law
   - new 101 guidance

Patent Strategy Issues

- Whether to pursue patents

  Cons

  – the blockchain community is drawn toward instantaneous and iterative collaboration (designers feel driven to publish papers and push code to GitHub ASAP)

  – patents slow down this process

  – if only interested in a defensive strategy, can open source the code and publish papers to establish priority

  Pros

  – patent disclosures describe concepts more broadly than papers

  – a patent portfolio may add more value to a company

  – demand letters may be more persuasive

  – offensive litigation strategy + potential to win damages

Patent Strategy Issues

- Balancing patent prosecution needs with open source considerations
- Patent Prosecution
  - can take weeks from the initial invention disclosure to file a patent application
  - the application must be filed before public disclosures (to preserve int'l rights)
  - must account for inventorship issues (e.g., Chinese and Indian nationals on the same team; both countries require filing first)
- Open Source
  - by publishing papers and uploading code to GitHub, software engineers can receive feedback in a timely manner
  - open sourcing is good for the community as a whole
- Strategy
  - can file a series of basic provisional apps for minor iterations, and more comprehensive utility apps for major milestones
  - alternatively, can file apps less frequently if software engineers are ok with waiting longer to open source their work

Sources of Prior Art

- Patent Application Publications
  - 1240 apps filed in 2017
  - 594 apps filed in 2016
  - 258 apps filed in 2015
  - 27 apps filed in 2013

- Issued Patents
  - many of the products patented focus on the application of blockchain to logistics, medical services, and public services

- Blockchain Papers
  - white papers (overviews) include bases for 103 motivation statements
  - yellow papers (more technical) include bases for 102/103 rejection citations

Examiner Strategies

- BRI: **Broadest** Reasonable Interpretation
  - blockchain technology includes many specialized terms
    - e.g.: consensus, digital wallet, proof of work, miner, node, ledger, permission, public/private key, etc.
  - many of these terms are generic terms used in a specialized manner
  - examiners will use the most generic definition of a term, even if it is more specifically defined in the spec
  - however, the more comprehensive the definition, the better the support for clarifying a claim element during prosecution
- 103 Motivation Statements
  - blockchain technology uses concepts related to mathematical formulas, networking, databases, contracts, and currency
  - examiners will separate these concepts and find a reference that teaches each one
  - the motivation to combine these references is often not very grounded (no TSM or other rationale)
  - language in the disclosure that describes motivations for the various inventive concepts, and improvements over the prior art, can be useful in challenging 103 combinations

Potential Changes in the Law

- For example, 35 U.S.C. 101

> "The proposed new guidance would explain that Supreme Court jurisprudence taken together effectively allows claims that include otherwise excluded matter as long as that matter is integrated into a practical application. The line, in other words, delineates mere principles, on one hand, from practical applications of such principles, on the other."
>
> -- USPTO Director Iancu, Remarks delivered at the Intellectual Property Owners Association 46th Annual Meeting

  - The proposed guidance would also synthesize "abstract ideas" as falling into the following three categories:
    - Mathematical concepts (formulas, calculations)
    - Certain methods of organizing human interacts (economic, commercial, marketing sales)
    - Mental processes (observation, evaluation, judgment)

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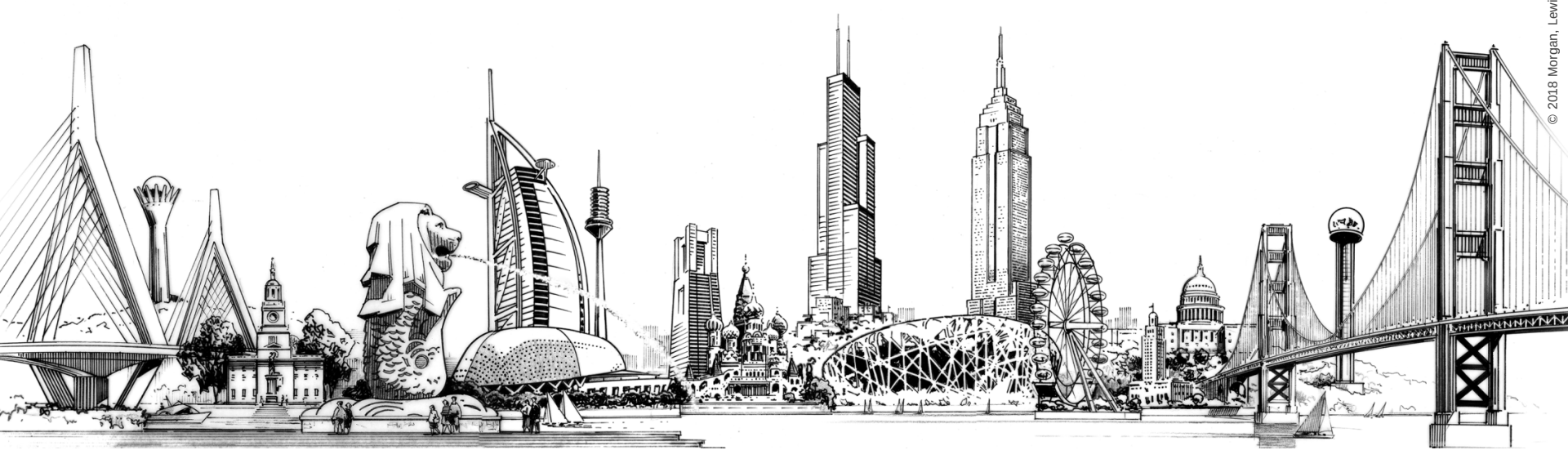
BLOCKCHAIN & PATENTS

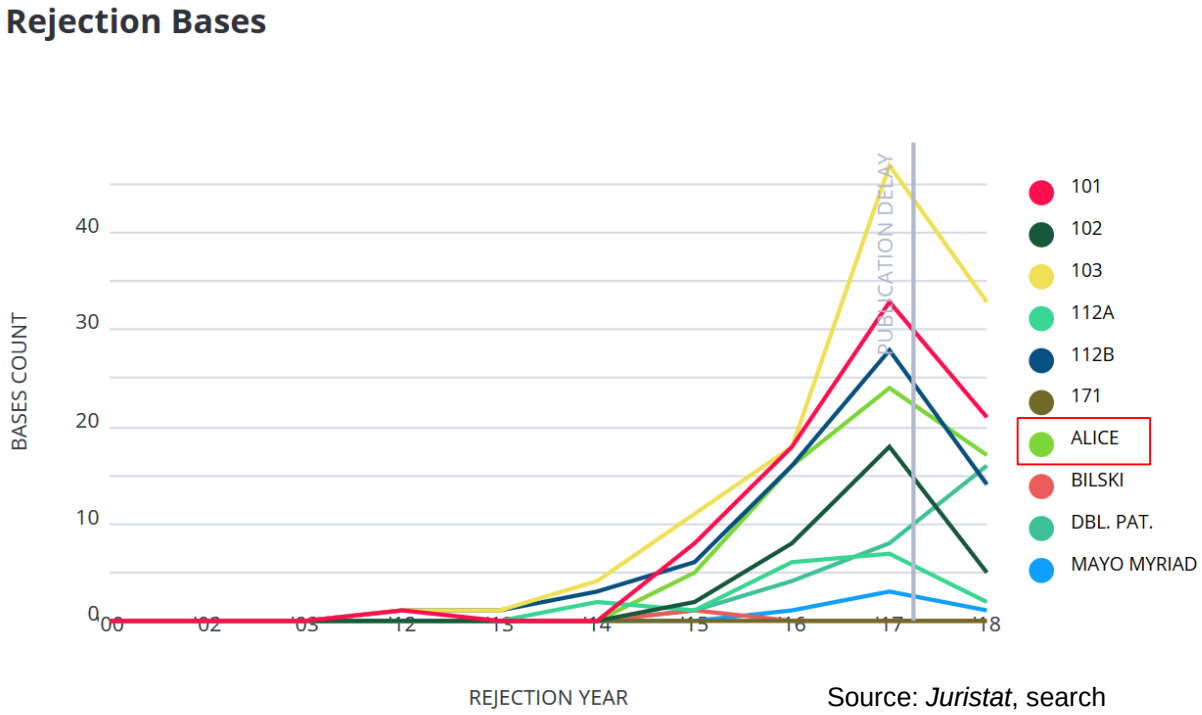
§101 *Alice* Rejections



ANALYTICS

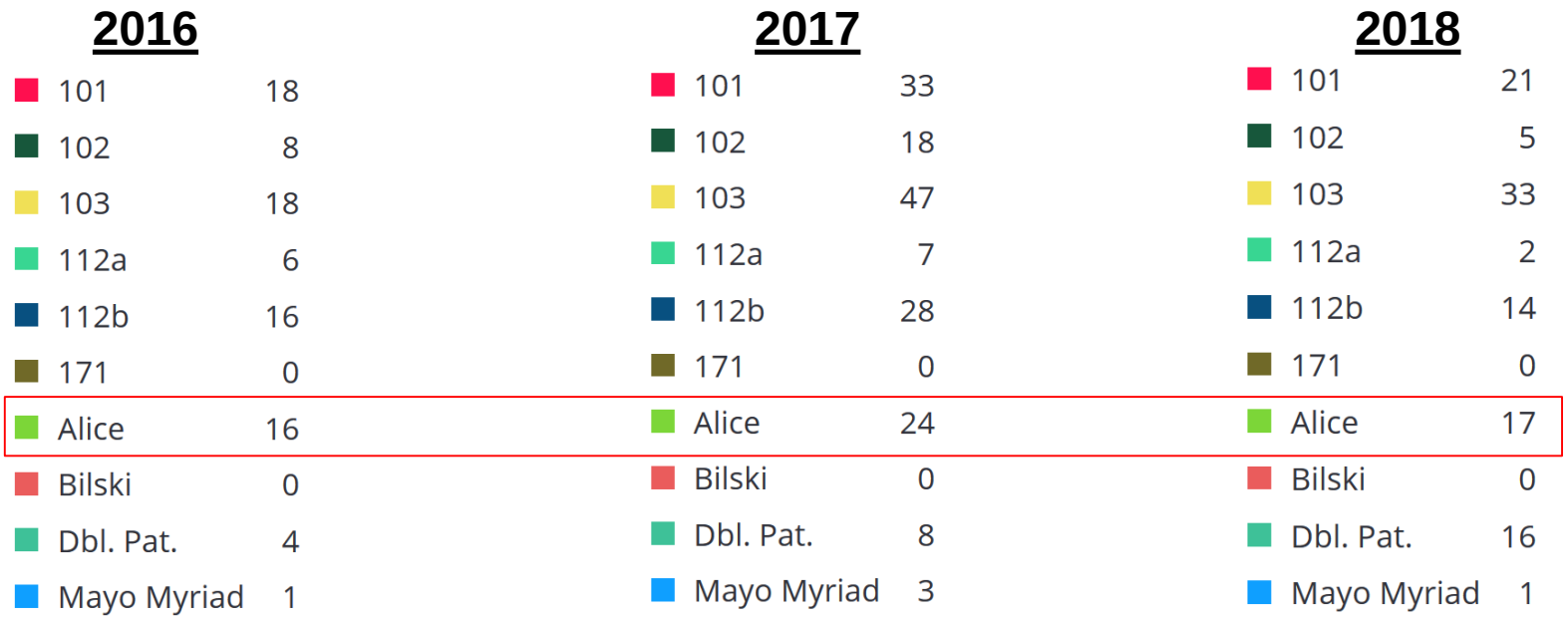
ALICE BASED § 101 REJECTIONS FOR APPLICATIONS THAT INCLUDE THE TERMS BLOCKCHAIN OR "DISTRIBUTED LEDGER" IN THE DESCRIPTION

Rejection Bases Over Time



Source: *Juristat*, search executed on Nov. 2, 2018

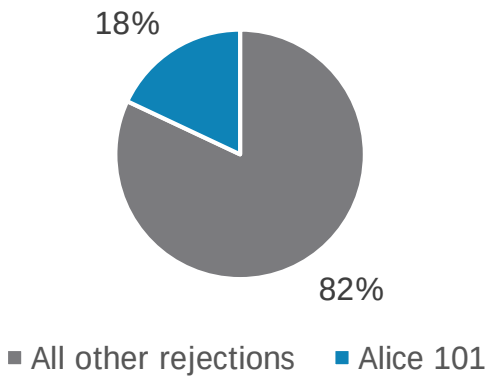
Rejection Bases – 2016 to November 2018 Raw Count



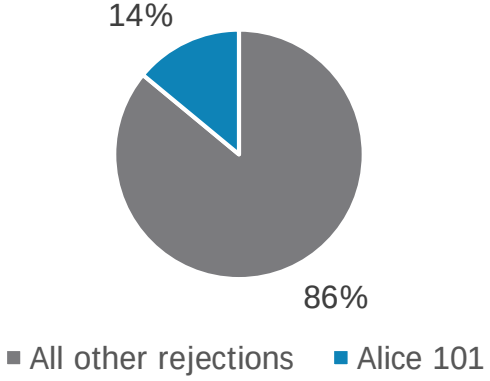
Source: *Juristat*, search executed on Nov. 2, 2018

Alice Rejection Percentages – 3 year time period

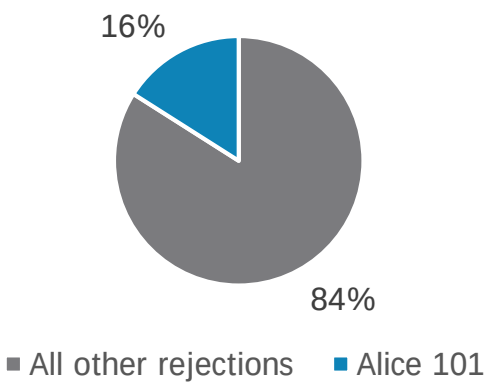
2016



2017



2018



ALICE BASED § 101 REJECTIONS

Section 101 Rejection

- Title 35, Section 101 of the United States Code reserves patent eligibility for any man-made process, machine, manufacture, or composition of matter
- Patent eligibility generally is a low barrier to overcome, but made more problematic in the aftermath of *Alice* decision
  - Abstract ideas, for example, are not deemed patent-eligible material
- Patentability is generally more difficult to demonstrate as it requires the given patent be new, nonobvious, and useful

Alice Corp. v. CLS Bank International (2014)

- US Supreme Court reexamined patent eligibility for business methods and software patents
- Alice was the assignee of several software patents that used a computer system as a third-party intermediary for calculating settlement risk
- US Supreme Court held that patent eligibility for business methods and software patents should be determined using the same framework in *Mayo Collaborative Services v. Prometheus Labs, Inc.,* 132 S.Ct. 1289, 1296-97 (2012)
- US Supreme Court held the patents were not directed to eligible subject matter because the claims were based on abstract ideas and merely required the generic implementation of a computer

Subject matter eligibility in view of *Alice* – USPTO test

- During prosecution, US Patent and Trademark Office applies the following test
- (Part 1) Is the claim directed to at least one statutory category (*e.g.*, process, machine, manufacture, or composition of matter)?
- (Part 2) If (1) is true, then apply this two part test:
  - Step (a). Is the claim directed to a judicial exception (*e.g.*, abstract idea, law of nature, natural phenomenon)?
    - No: claim is patent eligible subject matter
    - Yes: apply the following test in Step (b)
  - Step (b). Do the additional elements of the claim, taken individual and as a combination amount to "significantly more" than a judicial exception?
    - Yes: claim is patent eligible subject matter
    - No: claim is not patent eligible subject matter

Blockchain patents – what technical problems are addressed?

- Generally: Blockchain refers to a decentralized / distributed peer-to-peer system that maintains a ledger of transactions for a network of users
- Problem: how to achieve and maintain integrity of transactions in a distributed peer-to-peer (P2P) system that include an unknown number of peers with unknown reliability and trustworthiness
- Blockchain technology is used to record and verify virtual transactions, and thus helps thwart malicious users from modifying prior ledger entries on the network and defrauding other users

Blockchain patents – Drafting tip: describing technical advantages in patent application

- Example Advantages:
- (1) P2P system may reduce computational processing times (*e.g.*, improve performance of computer) by harnessing shared resources other computers on the network
- (2) Direct interaction between parties instead of through a middleman / middlemen thereby potentially lowering time to complete a transaction (*e.g.*, lower latency and increased efficiency)
- (3) Computational resources (*e.g.*, processing power, storage capacity, or information distribution) are directly available to other members of P2P network (*e.g.*, rooted in computer technology)
- (4) Distributed ledger is stored on all computers connected to the P2P network and a trusted third party intermediary is not needed to input information (*e.g.*, improving and existing conventional centralized implementations)
- (5) Users on the P2P network verify transactions thus increasing network security (*e.g.*, not possible without computer technology for software, computer hardware, and network)

Blockchain patents – addressing 101 rejections for Part 2, step (a) of USPTO test

- Focus on technical advantages: Blockchain is not directed toward excluded abstract subject matter in view of aforementioned technical advantages
- Suggested other arguments (and/or claim amendments, if feasible)
- (1) Claim is limited to use in a particular technological environment
- (2) Claim is directed to technical improvements over previous / existing technology

Blockchain patents – addressing 101 rejections for Part 2, step (b) of USPTO test

- When viewed as a whole, elements in a claim amount to “significantly more” than the patent-ineligible subject matter
- Example argument: claim elements describe a process that is not well understood to those in the Blockchain field and overcome a problem that specifically arises in the Blockchain field
- Example additional argument: application describes technical solution that addresses the above problem in the Blockchain field
- Suggested argument, if applicable: claim element (or combination of elements) is not well-understood, routine or conventional unless the Examiner provides citation or takes Official Notice (*Berkheimer* Memo – April 19, 2018)

Blockchain patents – Other drafting tips

- Draft claims and description to illustrate improvements over prior Blockchain technologies (*e.g.*, consider whether experts in the field would view the invention as an improvement or as conventional)
- Describe improvements to the function of a computer itself
- Include description for applying the (alleged) judicial exception with a particular machine
- Draft claims with elements that transform a particular article, add limitation(s) other than what is well understood, and/or confines the claim(s) to a particular useful application
- Provide sufficient technical details implementing the algorithms in software, or functionality of hardware components executing the software or firmware

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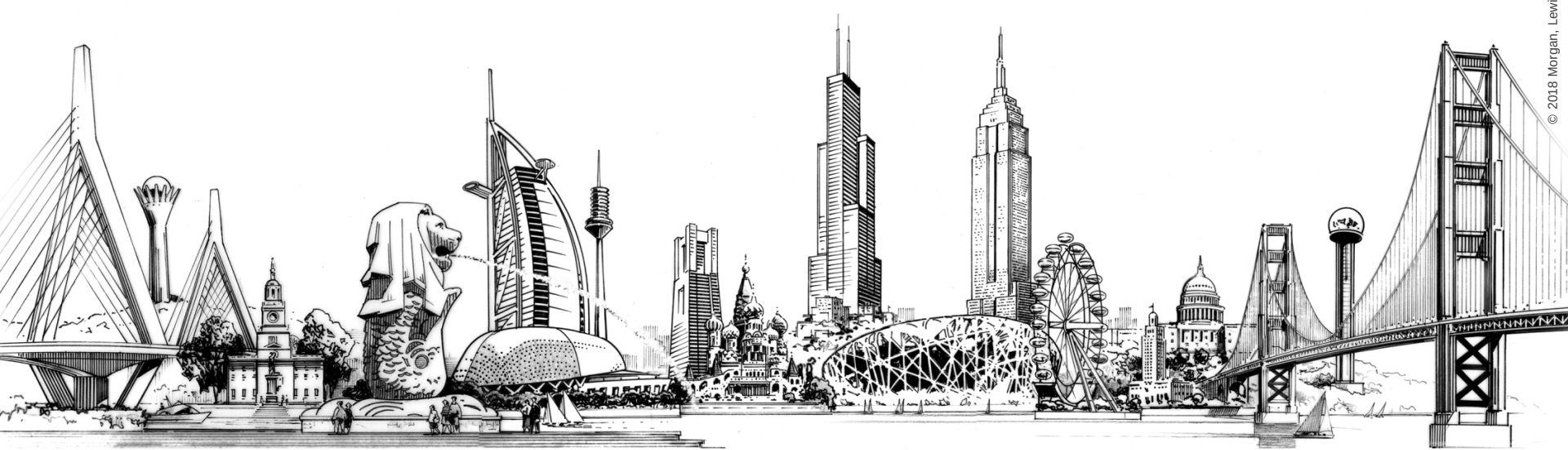
BLOCKCHAIN & PATENTS

Intellectual Property Litigation over Blockchain Technology



A Look at Blockchain Litigation. 2014-Present

- Filtering for complaints in patent actions that contain “blockchain” or “bitcoin” from the last four years provides one results, *Uniloc USA, Inc. et al v. Kik Interactive, Inc.*
  - This was actually three separate actions filed in the Eastern District of Texas.
  - However, the patents involved we not necessarily blockchain-focused, instead, they were communications related. The complaint focused on Kik’s planned cryptocurrency platform as a background fact.

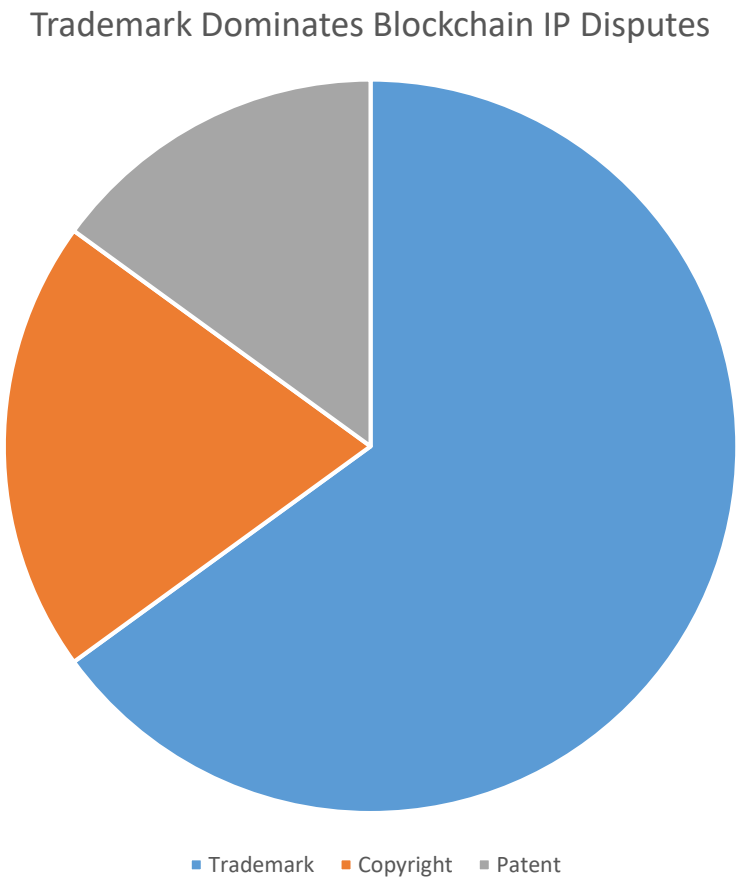
A Look at Blockchain Litigation. 2014-Present

- Other IP actions are primarily Trademark related, with some copyright actions. Examples:
  - *Telegram Messenger Inc., v. Lantah, LLC,* Case No. 18-cv-2811 (N.D. Cal., 2018)
    - Telegram received trademarks for GRAM and TON to be used in association with their financial services and messenger tools. Sued Lantah, who announced that its cryptocurrency would also be named “gram.”
    - Successfully obtained an injunction prohibiting Lantah from using the GRAM mark for cryptocurrency in the United States.

A Look at Blockchain Litigation. 2014-Present

- Examples (continued)
  - *Blockchain Luxembourg, S.A. et al. v. Paymium, SAS,* Case No. 1:18-cv-8612 (S.D.N.Y., 2018)
    - Blockchain (Plaintiff) offers bitcoin wallet software, online tools and other products and services, with its BLOCKCHAIN and BLOCKCHAIN.INFO marks. Paymium used the marks BLOCKCHAIN.IO and intended to launch an ICO under those marks
    - No Answer Yet.

A Look at Blockchain Litigation. 2014-Present



Thoughts on Past Litigation

- Blockchain is increasingly important for messenger service companies, as seen in both Kik and Telegram:
  - P2P Messaging ->P2P payments
  - P2P Payments are becoming increasingly social as well

- Blockchain may be a subsidiary issue in IP cases going forward, important to damages, if not the central technology itself.

Pending Developments

- Blockchain Defensive Patent License:
  - Agreement amongst mining hardware manufacturers to license their products on FRAND terms
  - https://blockchaindpl.org
  - Current members include:
    - Little Dragon Technology LLC
    - Halong Mining
    - QRF Solutions Pte Ltd
    - Whalechain Technology Co. Ltd
    - Cynosure Technologies Co. Ltd
    - ShenZhen Microbt Electronics Technology Co. Ltd
    - **Notably Absent from the Member List is Bitmain**

ASICBoost

- The BDPL is currently centered around the so-called “ASICBoost” patent *application,* WO2015077378A1
- This technology is a clever hack that makes miners generating SHA-256 hashes more efficient
  - Mining is incredibly energy intensive
  - Any boost in efficiency can be critical in making an operation profitable
- For a while, there was speculation that Bitmain was secretly using the ASICBoost technology
  - It has now published firmware allowing for “overt” use of ASICBoost

ASICBoost

- Numerous Key Issues If This Is Litigated:
  - Section 101
  - Contributory Infringement
  - Pre-issuance damages for patent infringement
  - Antitrust/FRAND obligations
  - Willfulness – effect of potential concealment

Takeaways

- Litigation will likely remain focused on “soft-IP” issues while the space develops.

- Blockchain related litigation may be an increasing concern for communications and p2p payment related companies

- A full panoply of defenses should be considered in patent related litigation, not just standard 102/103 research.

Biography

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Serving as the leader of Morgan Lewis's semiconductor practice and as a member of the firm's fintech and technology practices, Andrew J. Gray IV concentrates his practice on intellectual property (IP) litigation and prosecution and on strategic IP counseling. Andrew advises both established companies and startups on Blockchain, cryptocurrency, computer, and Internet law issues, financing and transactional matters that involve technology firms, and the sale and licensing of technology. He represents clients in patent, trademark, copyright, and trade secret cases before state and federal trial and appellate courts throughout the United States, before the US Patent and Trademark Office's Patent Trial and Appeal Board, and before the US International Trade Commission.

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Triet M. Nguyen has more than 10 years of experience servicing clients, from startups to large companies, on intellectual property (IP) matters regarding US and global patent prosecution, including strategies in developing robust and monetizable IP portfolios through intelligent competitive analysis. As a former Silicon Valley software engineer, Triet applies his technical acumen on IP matters in the leading edge areas of artificial intelligence, machine learning, neural networks, blockchain technology, computer vision, and augmented reality.

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Jacob Minne advises clients on patent, trademark, copyright, and trade secret litigation, as well as related antitrust matters. His litigation experience includes cases for clients in a diverse range of technology fields such as semiconductor chip manufacturing methods, medical devices, and mobile software. He has experience in forums including the US District Court for the Central District of California, the US Court of Appeals for the Federal Circuit, and the US International Trade Commission (USITC).

Biography

Benjamin H. Pezzner brings a diverse background in patents to his intellectual property (IP) practice, including experience as a patent examiner, an electrical design engineer, and an inventor. This background enables Benjamin to bring a unique combination of perspectives to a practice that includes counseling clients on patent strategy and prosecution in a variety of computer hardware and software fields.

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