Regulating New Technologies: FinTech, RegTech & SupTech
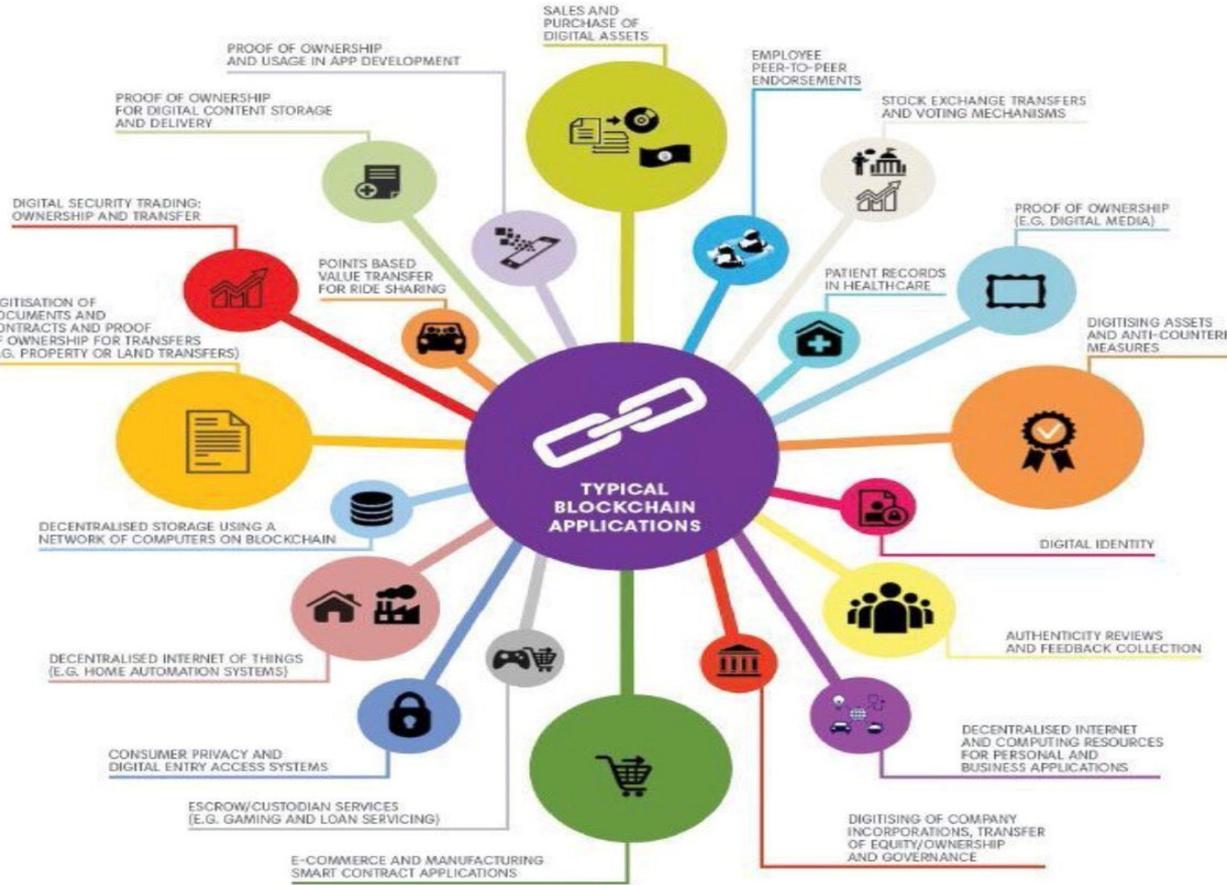
Finance Malta 11th Annual Conference
17 May 2018

Dr. Nasser Saidi
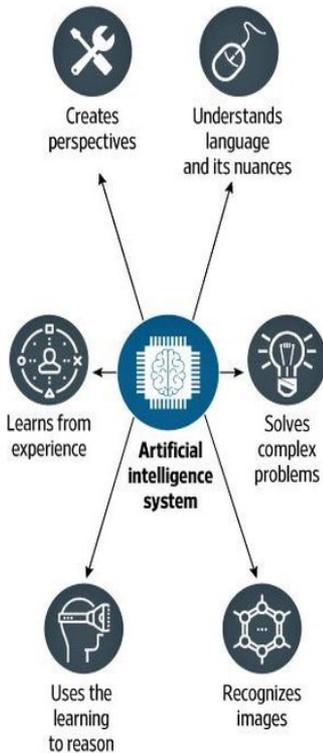
Agenda

*.Tech Universe: Development, Implementation, Barriers & Beyond

✓Guidelines & Practices *.Tech

✓Key Takeaways

Tech disrupting many regulated industries: retail, banking & finance, transport, energy, telecoms, health, defence & government…**DLT**, **AI will be ubiquitous**

SALES AND PURCHASE OF DIGITAL ASSETS

PROOF OF OWNERSHIP AND USAGE IN APP DEVELOPMENT

PROOF OF OWNERSHIP FOR DIGITAL CONTENT STORAGE AND DELIVERY

EMPLOYEE PEER-TO-PEER ENDORSEMENTS

STOCK EXCHANGE TRANSFERS AND VOTING MECHANISMS

PROOF OF OWNERSHIP (E.G. DIGITAL MEDIA)

DIGITAL SECURITY TRADING: OWNERSHIP AND TRANSFER

POINTS BASED VALUE TRANSFER FOR RIDE SHARING

PATIENT RECORDS IN HEALTHCARE

DIGITISING ASSETS AND ANTI-COUNTERF MEASURES

DIGITISATION OF DOCUMENTS AND CONTRACTS AND PROOF OF OWNERSHIP FOR TRANSFERS (E.G. PROPERTY OR LAND TRANSFERS)

TYPICAL BLOCKCHAIN APPLICATIONS

DECENTRALISED STORAGE USING A NETWORK OF COMPUTERS ON BLOCKCHAIN

DIGITAL IDENTITY

DECENTRALISED INTERNET OF THINGS (E.G. HOME AUTOMATION SYSTEMS)

AUTHENTICITY REVIEWS AND FEEDBACK COLLECTION

CONSUMER PRIVACY AND DIGITAL ENTRY ACCESS SYSTEMS

DECENTRALISED INTERNET AND COMPUTING RESOURCES FOR PERSONAL AND BUSINESS APPLICATIONS

ESCROW/CUSTODIAN SERVICES (E.G. GAMING AND LOAN SERVICING)

E-COMMERCE AND MANUFACTURING SMART CONTRACT APPLICATIONS

DIGITISING OF COMPANY INCORPORATIONS, TRANSFER OF EQUITY/OWNERSHIP AND GOVERNANCE

How AI works

Creates perspectives

Understands language and its nuances

Learns from experience

Artificial intelligence system

Solves complex problems

Uses the learning to reason

Recognizes images

Areas of focus for firms looking to exploit AI opportunities

Area	Firms (in %)
Data science	9.6
Business intelligence	7.8
Health plans and patient care	6.3
Computer vision	5.6
Speech recognition	5.3
Aerospace and defence	5.3
Natural language processing	5.1
Entertainment	4.8

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New Technologies & Transformations

Key technologies

- Application Program Interface
- Internet of Things
- Machine Learning
- Artificial Intelligence
- Big Data Analytics
- Distributed Ledger Technology
- Smart Contracts
- Cloud computing
- Cryptography
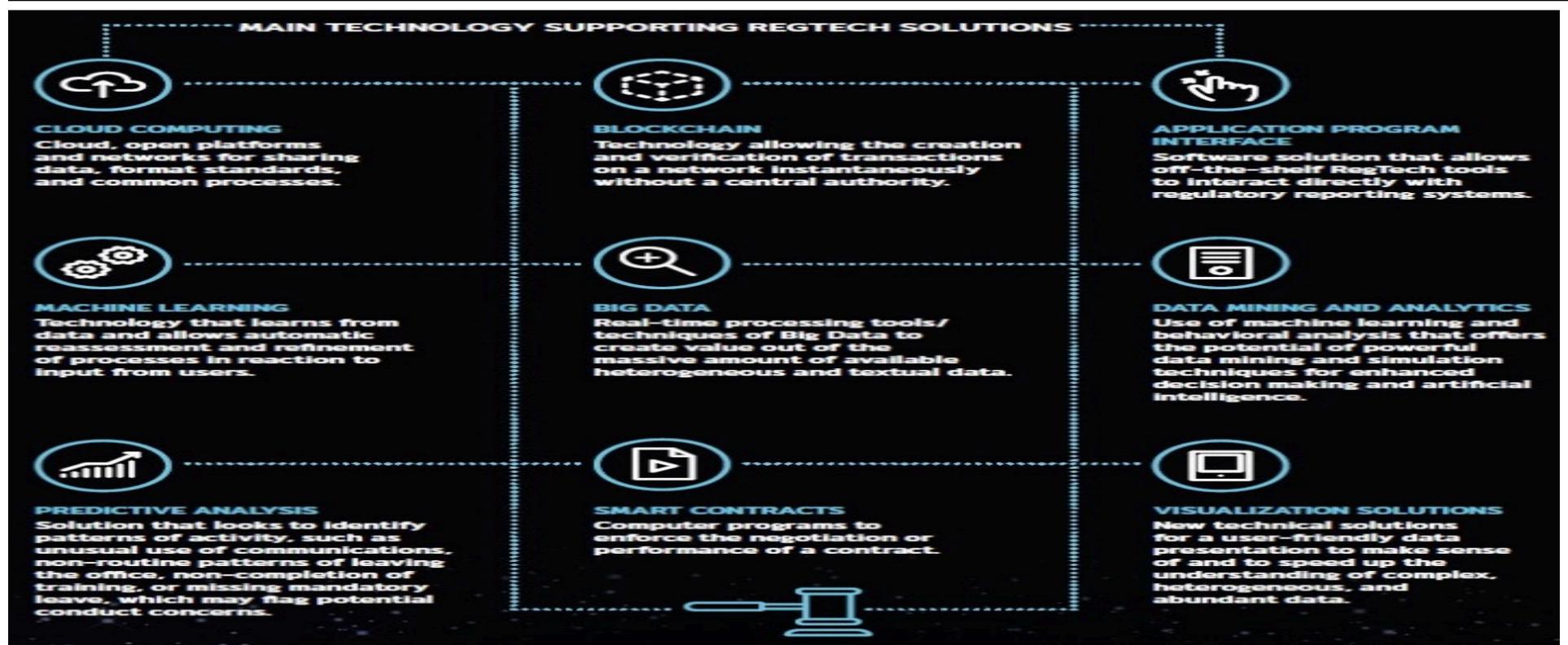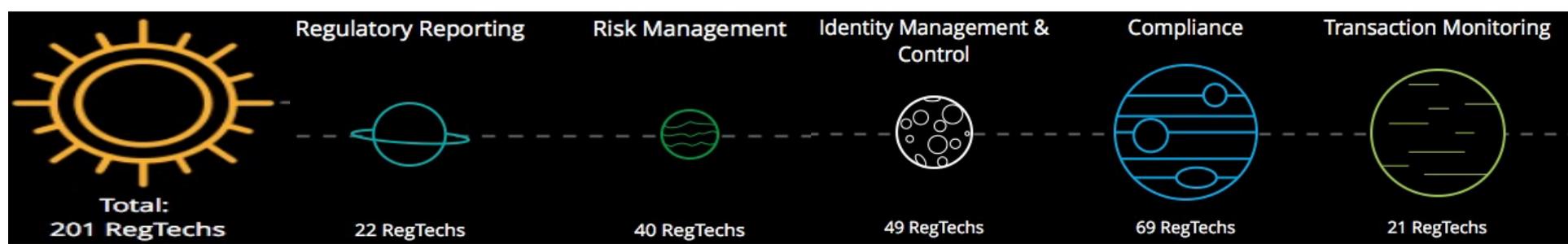- Biometrics

FinTech

RegTech

SupTech

New financial services/products & business models

- Payment solutions
- Digital currencies
- Financial Markets: trading, custody, registries
- Crowd-finance
- Robo-advisers
- Trade finance
- Fund & Asset mgt.
- Tax mgt.
- Cybersecurity

RegTech for Financial institutions

RegTech definitions

- **IIF: "RegTech** is the use of new technologies to solve regulatory and compliance burdens more effectively and efficiently."

- **UK FCA: "RegTech** is a sub-set of FinTech that focuses on technologies that may facilitate the delivery of regulatory requirements more efficiently and effectively than existing capabilities"

- **BIS: "RegTech** is defined as any range of FinTech applications for regulatory reporting and compliance purposes by regulated financial institutions. This can also refer to firms that offer such applications".

- **BIS: "SupTech**: application of FinTech by supervisory authorities"

	Regulatory Reporting	Risk Management	Identity Management & Control	Compliance	Transaction Monitoring
Total: 201 RegTechs	22 RegTechs	40 RegTechs	49 RegTechs	69 RegTechs	21 RegTechs

MAIN TECHNOLOGY SUPPORTING REGTECH SOLUTIONS

CLOUD COMPUTING
Cloud, open platforms and networks for sharing data, format standards, and common processes.

BLOCKCHAIN
Technology allowing the creation and verification of transactions on a network instantaneously without a central authority.

APPLICATION PROGRAM INTERFACE
Software solution that allows off-the-shelf RegTech tools to interact directly with regulatory reporting systems.

MACHINE LEARNING
Technology that learns from data and allows automatic reassessment and refinement of processes in reaction to input from users.

BIG DATA
Real-time processing tools/techniques of Big Data to create value out of the massive amount of available heterogeneous and textual data.

DATA MINING AND ANALYTICS
Use of machine learning and behavioral analysis that offers the potential of powerful data mining and simulation techniques for enhanced decision making and artificial intelligence.

PREDICTIVE ANALYSIS
Solution that looks to identify patterns of activity, such as unusual use of communications, non-routine patterns of leaving the office, non-completion of training, or missing mandatory leave, which may flag potential conduct concerns.

SMART CONTRACTS
Computer programs to enforce the negotiation or performance of a contract.

VISUALIZATION SOLUTIONS
New technical solutions for a user-friendly data presentation to make sense of and to speed up the understanding of complex, heterogeneous, and abundant data.

RegTech is harnessing new tech

Regulatory Compliance
- Regulatory intelligence: Modeling, scenario & forecasting
- Dynamic compliance & governance
- Regulatory reporting; eventually, real-time reporting

Risk management
- Market risk
- Conduct risk
- Cyber risk
- Real-time trading tasks/ financial markets trading

Financial crime
- Real-time payments monitoring + Financial fraud
- Money laundering & terrorist financing
- Market abuse
- Tax compliance

Identity management
- KYC for identity verification
- KYC for onboarding
- KYC for AML/CFT checks
- Fraud detection

Main barriers to the Implementation of RegTech

Do regulators have the capacity to adapt to new tech? Barriers to knowledge sharing? Infrastructure readiness? Legal infrastructure: recognition of digital assets, digital identities

Impediments for RegTech implementation

Legal restrictions on the use of data and new technologies

A lack of data standardization

Regulatory deadlines for implementing new IT solutions in FIs

Outdated reporting portals and methods used by some regulators

Impediments for the RegTech market

Uncertainty due to still unfinished regulatory agenda

The preliminary stage of the regtech market
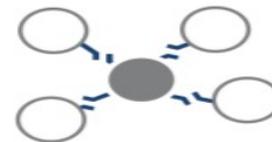
Lack of networks bringing together regulatory experts, software developers and FIs.

Ever-evolving Regulatory Landscape with RegTech & SupTech

RegTech for FIs

- **Dynamic compliance**: real-time monitoring of compliance levels, risks, regulatory requirements…
- **Identity Management & Control**: due diligence, KYC procedures
- **Risk Management**: risk reporting, data aggregation….
- **Regulatory reporting**: automate & integrate regulatory reporting requirements
- **Transaction monitoring**: risk alerts, end-to-end integrity validation, anti-fraud systems…
- **Trading in Financial markets**

RegTech for Supervisors (SupTech)

- **Data input approach**: package business data
- **Data-pull approach**: raw data sourced directly from businesses OS
- **Real-time access**: supervisor "sees" operational data at will
- **Reporting utilities**: common database of reported granular data but also as a repository of the interpretation of reporting rules; move towards machine readable regulations
- **Gathering intelligence from unstructured data**

SupTech: New Era of Supervision & Regulation?

A few examples of SupTech applications (in concept or pilot phase):

- **Real-time supervision**, by looking at data as it is created in the regulated institutions' operational systems;

- **Exceptions-based supervision:** automated checks on institutions' data and other information automatically collected and analyzed by the supervisory agency identify "exceptions" or "outliers" to pre-determined parameters for expected behavior, triggering supervisory action;

- **Automated implementation of supervisory measures.** e.g. automatically created direction for capital increases based on automated data analysis, and decision-making;

- **Algorithmic regulation and supervision** in areas such as high-frequency trading, algorithm-based credit scoring, robo-advisors or any service or product that automates decision-making;

- **Dynamic, predictive supervision by using machine learning**, which could move supervisors to take supervisory actions in a preemptive manner based on predictive behavioural analysis.

Supervisory initiatives to facilitate innovation

	Innovation facilitators		
	Innovation hub A place to meet & exchange ideas	**Accelerator** "Bootcamp for start-ups" culminating in a pitch presentation	**Regulatory sandbox** Testing in a controlled environment, with tailored policy options
Australia	ASIC	ASIC	ASIC
Belgium	NBB/FSMA		
ECB	SSM		
France	ACPR/AMF	BDF	
Germany	BaFin		
Italy	BOI		
Hong Kong	HKMA	HKMA	HKMA/SFC/IA
Japan	BoJ/ FSA		
Korea	FSC		FSC
Luxembourg	CSSF		
Netherlands	DNB/AFM		DNB/AFM
Poland	FSA		
Singapore	MAS	MAS	MAS
Switzerland	Finma		Finma
UK	BoE/FCA		
UAE		ADGM, DIFC	ADGM

Wider-ranging and more value-adding collaborations will arise

Collaboration Model	Initiative Examples	Benefits	Players Involved
Bank - Bank	Machine Learning tool for compliance (ING, CBA)	Mutualize cost of compliance and consistent interpretation of regulation	CommonwealthBank, ING, Nordea, Santander
Bank - Regulator	KYC utility in Singapore	Offer faster digital onboarding service to customers while meeting the KYC requirements	MAS, OCBC Bank, Standard Chartered, UOB, DBS
Bank - Startup	RegTech accelerators RegTech investments	Use advanced technologies for faster, better and cost-effective compliance	Citi, HSBC, UBS, NASDAQ, BNP PARIBAS, Standard Chartered, BANK OF ENGLAND
Bank - Vendor	Cognitive RegTech	Traditional vendors leverage advanced technologies to make strides into RegTech	MIZUHO, IBM Watson
Bank - Regulator - Startup	Distributed ledger for regulatory reporting	Develop effective, future-proof solutions that meet the needs of all parties involved	RBS, FCA, r3.
Startup - Startup	Comprehensive compliance offering	Combine niche technology expertise to create a complete solution for compliance	encompass, ComplyAdvantage
Regulator - Startup	Regulator Sandbox Regulator accelerators	Allow startups to test innovative business models and allow regulators to experiment with new technologies for supervision	FCA, Trade, R²A
Regulator - Regulator	Home-Host regulator collaboration	Harmonize policies across borders to promote banks and fintechs to expand and operate smoothly	ASIC, FCA, MAS

Collaboration models and new ways of working are emerging between all parties of the regulatory ecosystem.

Recommended Good practices for Policymakers, Regulators & Supervisors

Practice 1: **Focus attention on technological innovation and undertake pro-active review of regulatory regimes**. Policymakers and regulators should dedicate attention to DLT, AI & related innovations and be supportive of them by ensuring clear and appropriate regulatory regimes, to remove barriers.

Practice 2: **Creation/support of innovation facilitators such as hubs and sandboxes, incubators, accelerators** to keep close to emerging developments and foster shared learning. Best practice is to review and create *structural mechanisms* to enable ongoing market engagements.

Practice 3: **Coordination, collaboration and communication between domestic regulators**. The emergence of innovations such as digital money, crypto-assets, ICOs, digital financial and non-financial services, requires the development of new regulatory regimes and cooperation & coordination between regulators in different industries.

Practice 4: **Global cooperation with standard-setting bodies**. Digital financial services are unconstrained by geographical borders and globally situated third-party financial services (e.g. cloud providers), requires international coordination & cooperation by authorities, including in three areas: Monitoring of macro-financial risks, mitigation of cyber-risks, and the managing of operational risks from third-party providers.

Practice 5: **Build staff capacity & knowledge of regulators & supervisors of the fast-evolving innovation landscape**. Technological innovation is an instance of 'creative destruction' that does not have a single issuer, and it is not the liability of any single entity. Assessing the impact of these innovations on monetary policy, markets and financial stability is not straightforward

Some key takeaways for *.Tech

1. DLT, AI, robotics are **General Purpose Technologies**: economy wide effects
2. Focus on **economic development aspects of new technologies**: as an enabler for financial inclusion/ access to finance
3. **FinTech is key to economy-wide adoption:** engage with Tech companies & FinTech and incumbents; facilitate wide adoption, remove barriers; conduct economy-wide regulatory impact assessments
4. **Global Value Chain linkages:** *.Tech for trade in goods & services
5. **International cooperation & coordination** are required since digital services are *borderless* and not just cross-border;
6. **National security:** DLT/AI has critical infrastructure, military & security uses
7. **Major paradigm shifts:** RegTech could transform regulatory compliance and risk management at financial institutions, while SupTech could increase supervisory effectiveness and efficiency

Al-Khwārizmī's vision of SupTech
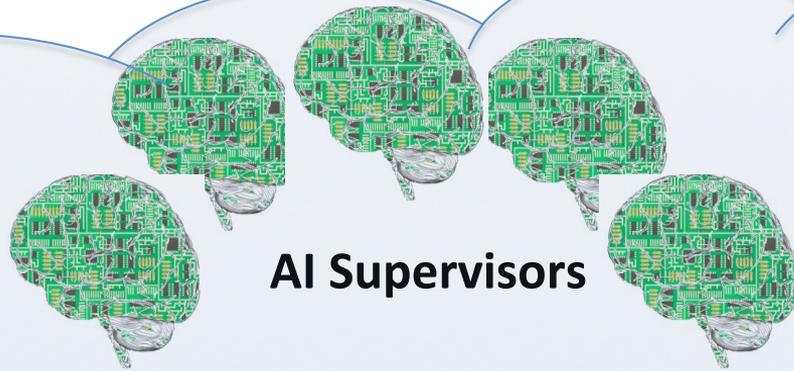
AI Supervisors
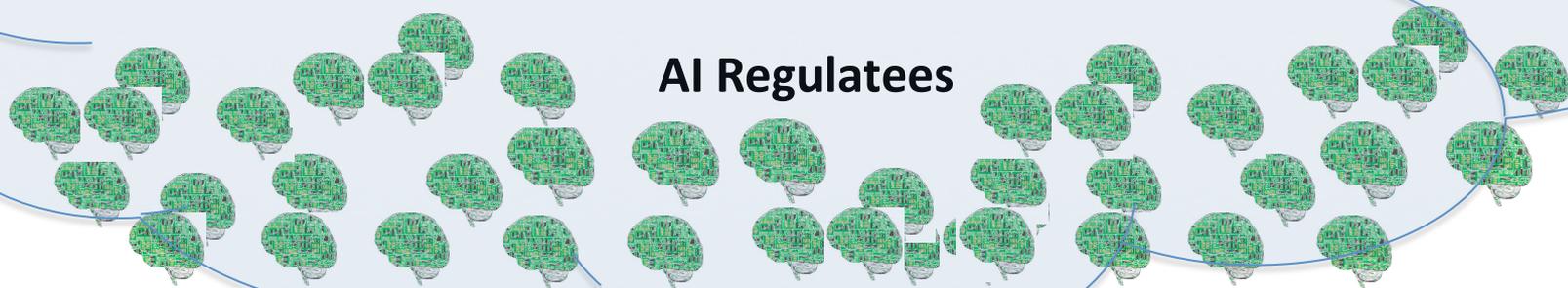
AI Regulatees

Appendix: Selected References

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Regulating New Technologies

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