TECHNOLOGY AND LAW:INTERFACE

By Group Captain P Aanand Naidu (retd)

Law

Definition of Law

Law is a set of pre-set rules meant for the purpose of keeping the peace and security in society

Law is social engineering which means a balance between the competing interests in society

Technology

Definition of Technology

The use of scientific knowledge for practical purposes or applications, whether in industry or in our everyday lives.

Interaction between Law and Technology

- "Law and technology interact when legal rules foster or retard the development of technology. They also interact when society decides that technology produces undesirable results and employs legal rules to contain or modify those results."- Daniel J. Gifford, 'Law and Technology: Interactions and Relationships'

Relationship

- Stability Vs Flux
- Consistency and change
- Rapidity of growth in technology
- Tech: Innovation and Disruption
- Law: Catching up actions

IP and Protection

- Competition
- Monopoly
- Technology
- Law: Catching up actions

Assimilation

- Law and Culture
- Technology and Culture
- Culture
  - Physical-Tech
  - Non-physical
- Early years of technology : Slow paced
- Acculturation to tech domain

Role of Technology

- Life in general
- Use of resources
- Teaching and learning
- Manufacturing
- Data handling/ processing
- Speed in performing tasks
- Consistency in output

Role of Law

- Norms for conduct
- Brings order
- Resolution of conflicts
- Feeling of security
- Protection for the weaker sections

Evolution of Technology

- Ancient Times
  - Mostly unrecorded
- Medieval Times
  - Printing press
  - Textile tech
  - Steam engine

Evolution of Technology (...Contd)

- Modern Times
  - Shipping
  - Airplanes
  - Nuclear Technology
  - Rockets/ Satellites
  - Computers
  - Internet
  - Nano technology
  - Bio-technology
  - Quantum Computing

Growth of Technology

- Tech growth is not limited to a particular segment
- Tech can be a by-product
- Can have unintended outcomes
- Potential for use and misuse
- Secretive exploitation

Growth of Law

- By the state
- Well considered
- Emanates out of necessity
- Structures to implement
- Well Publicised

Growth of Technology

- First IR – 1760: Textiles, mining, agriculture
- Second IR-1870: Railways, Telegraph, Electricity
- Third IR-computers and Com tech

Industry 4.0 Tech

- Industry 4.0: Digital Industry
  - Robotics
  - Mobile devices and 5G
  - Internet of things (IoT) platforms
  - Location detection technologies
  - Advanced human-machine interfaces
  - Authentication and fraud detection

Industry 4.0 Tech (contd..)

* 3D printing
* Smart sensors
* Big analytics and advanced processes
* Multilevel customer interaction and customer profiling
* Augmented reality/ wearables
* On-demand availability of computer sources(Cloud Tech)
* Data visualization and triggered "live" training

Four Major Components

- Cyber physical Systems, Cloud computing
- IoT
- AI & ML
- Big Data

Industry 4.0 Tech: Advantages

- Advantages
  - Convergence of Tech
  - Efficiency
  - Higher productivity
  - New Markets
  - Ease of doing things
  - Better Health

Industry 4.0 Tech: Disadvantages

- Disdvantages
  - Cyber Security
  - Moral issues
  - Legal issues
  - Inequality
  - Labour displacement

NET and NEST

- Artificial Intelligence (AI)
- Machine Learning (ML)
- Additive Manufacturing (AM)
- Blockchain Technology,
- Big Data,
- Internet of Things (IoT),
- Virtual Reality (VR)
- Cognitive Technology,

NET and NEST

- Cyber technology,
- Crypto Currency,
- Genetic Engineering Techniques,
- Social Networking and Media
- Geospatial data, Nanotechnology
- Hypersonic Weapons
- Robotics
- Quantum Computing, Quantum Physics/Mech

NET and NEST: Legal Issues

- Traditional-Tech and its Impact on
  - Impact on State sovereignty
  - State Responsibility
  - Privacy
  - security

NET and NEST: Legal Issues

- Modern-
  - Data misuse
  - Evidence
  - Creative works and Copy Rights & IPR
  - Biometrics
  - Facial Recognition
  - Biotech
  - Genetics
  - Privacy
  - Synthetic Tech
  - Autonomous Robotics

Legal Issues

- Machines and Morality
- Legal Liability
- Legal and Ethical Dilemmas
- Jurisdiction
- Choice of Law
- Enforcement of Judgements
- Evidence
- Privacy
- Copy Rights and IPR

Internet and Legal Concerns

- Internet Infrastructure- Legal Concerns
  - ICANN Jurisdiction
  - Competition Law and Policy
  - Network Neutrality
  - Infrastructure-Sharing
  - Interoperability
    - Technological Interoperability
    - Legal interoperability

Data Flow and Legal Concerns

- Data- Meaning and Types
- Data Analytics
  - Data Mining and Pattern Recognition
  - Data Visualisation and Visual Analytics
  - Statistical Analysis
  - Prediction, Simulation and Optimisation

Data Flow and Legal Concerns

- Data – Uses
  - Internet of Things
  - 3-D Printing
  - Sharing Economy
  - E-Platforms
  - Entertainment Services
  - Electronic Payment System
    - Account-based Payment System
    - Electronic Currency Systems

Data and Issues

- Data Ownership
  - Technical Restrictions
  - Legal Framework
  - Contracts
- Data Protection and Privacy
  - European Union (EU)
  - United States (US)
- Data Localisation
- Data Jurisdiction
- Data Taxation

Impact of Disruptive Tech

- Creating new opportunities
- Creating new challenges.

Artificial Intelligence (AI)

- By 2020, 1 billion video cameras will be connected to AI
- By 2020, 85% of customer interactions will be managed without humans
- By 2025, AI software market will be $60 billion
- By 2030, AI will add an estimated $15.7 trillion to global GDP
- By 2020, there will be 4 billion AI-powered devices.

Autonomous Cars

- Moral Dilemmas
- Who is liable for damages resulting from accidents? Maker or machine?

Cloud Technology

- Shared Computer assets
- Storing and accessing data and programs over the Internet instead of your computer's hard drive.

Internet of Things (IoT)

- A giant network of connected "things" (including people) Gartner says that by 2020 there will be over 26 billion connected devices.

3D Printing Technology

- Its not only about Printing on Paper
- Making three dimensional solid objects from a digital file
- Copy Rights

Electronic Evidence: Challenges in Admissibility of Electronic Evidence

- Amendment to Evidence Act
- Admissibility
- Care
- Discretion

Intellectual Property

- In the area of intellectual property, technological advancements in digital media continues to impact on IP, both positively and negatively. More and more sectors are becoming IP intensive.

Digital Media and Serious Challenges to IP

- The ease with which works in digital form can be replicated
- The ease with which they can be transmitted
- The ease with which they can be modified and manipulated
- The equivalence of works in digital form
- The compactness of works in digital form

Nexus: Law and Technology can combine to protect IP in the digital age

- Content Identification Technique e.g YouTube's Content ID
- Block chain-powered anti-counterfeiting mechanisms
- Encryption for digital contents such as ebooks
- Online Dispute Resolution (ODR) for domain-name trademark infringements to cater to digital businesses, ecommerce sites, and others doing business online or providing services online
- Technology-friendly IP law reforms.

Suggested Code of Ethical Conduct for Robotics Engineers and a Code for Research Ethics Have Been Developed

Four ethical principles in robotics engineering:

- Beneficence: Robots should act in the best interests of humans
- Non-maleficence: Robots should not harm humans
- Autonomy: Human interaction with robots should be voluntary
- Justice: The benefits of robotics should be distributed fairly

Determining Liability of Robots

- Strict-liability approach (no fault required)
- Risk-management approach (liability of a person who was able to minimize the risks)
- This should be proportionate to the actual level of instructions given to the robot and to its degree of autonomy.

Challenges with AI-powered Devices

- The Question of Fault Challenge
  - "The real issue with AI powered devices is that as increasingly the decisions that they take become more and more removed from any direct programming and are in turn more based on machine learning principles, as we have discussed above, it becomes harder to attribute the question of fault."-

John C. Buyers, Artificial Intelligence: the real legal issues, Society for Computers and Law Journal, June 2017

Challenges with AI-powered Devices Contd

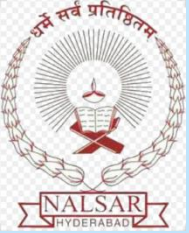
- The Big Data challenge
  - Smart devices stream terabytes of data which often violate data protection and privacy
  - The use of predictive analytics modeled by AI used by businesses to serve customers create privacy concerns.

Blockchain and Cryptocurrency

- “The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value.” - Don Tapscott and Alex Tapscott, cited in Senator Ihenyen, 'How the Blockchain Will Help Law ', Keynote Address, Blockchain & Cryptocurrency Conference , Civic Centre, Victoria Island, Lagos, 19–20 May 2018

Some Facts and Figures about Blockchain

- 30%: Blockchain's reported potential for reducing bank infrastructure costs
- $20 billion: Amount the global blockchain market is expected to be worth in 2024
- $1 million: Average investment in blockchain projects in 2017
- $1.4 billion dollars: Estimated amount that financial and technology firms invested in blockchain in 2016.



Thank you