

## Lecture Notes

On

## Cyber Security



University Academy  
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## UNIT – 5

### Iso:

There are many ways an organization can implement a quality management system. In-depth advice is available from a number of different resources, including the publication ISO 9001 for small businesses – What to do, but here are a few tips to get you started.

- Define your objectives. Why do you want to implement the standard?
- Make sure senior management is on board. It is crucial that everyone – from the top down – is supportive of the initiative and its objectives
- Identify your organization's key processes for meeting your objectives as well as your customers' needs. Within each of these processes, make sure you understand your customers' requirements and can guarantee that these are met – each and every time. This will form the basis of your quality management system.
- ISO 9001 is the best known of the ISO standards on quality, but there are many other standards that can help you reap the full benefits of a quality management system and put customer satisfaction at the heart of your business. A few documents are mentioned here, but additional information on the full family of quality standards can be found in the brochure Selection and use of the ISO 9000 family of standards.
- ISO 9000 contains detailed explanations of the seven quality management principles in addition to many helpful tips on how to ensure these are reflected in the way you work. It also contains many of the terms and definitions used in ISO 9001 and constitutes a useful companion document to help you build a successful quality management system.
- ISO 9004 provides guidance on how to achieve sustained success with your quality management system.
- ISO 19011 gives guidance for performing both internal and external audits to ISO 9001. Good internal audits will help ensure your quality management system delivers on promise and will get you ready for an external audit, should you decide to seek third-party certification.

**Cyber security standards** are techniques generally set forth in published materials that attempt to protect the cyber environment of a user or organization. This environment includes users themselves, networks, devices, all software, processes, information in storage or transit, applications, services, and systems that can be connected directly or indirectly to networks. The principal objective is to reduce the risks, including prevention or mitigation of [cyber-attacks](#). These published materials consist of collections of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies.

# Cyber Security

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ISO/IEC 27032:2012 provides guidance on the following core areas of cyber security:

- Information security
- Network security
- Internet security
- CIIP (critical information infrastructure protection)

You will receive practical information on the following critical areas:

- The definition of cyber security.
- The relationship between cyber security and other types of security.
- A definition of stakeholders and their roles in cyber security.
- Common cyber security issues and how to address them.
- A framework to enable stakeholders to collaborate on resolving cyber security issues.

Why should you implement ISO 27032?

- **Protect your organization against cyber risks**

ISO 27032 provides guidance on addressing common cyber security risks, including user endpoint security, network security and critical infrastructure protection.

- **Understand how cyber security forms a part of information security and physical security**

ISO 27032 shows you how cyber security is related to other forms of security, giving you the knowledge to draw together these domains for your organization's maximum benefit.

- **Know how to deploy a cyber security programs**

Benefit from best-practice guidance on how to optimize your cyber security measures in your organization.

## IT Act:

The Government of India enacted the Information Technology (I.T.) Act with some major objectives to deliver and facilitate lawful electronic, digital, and online transactions, and mitigate cyber-crimes.

### **Salient Features of IT Act**

The salient features of the I.T Act are as follows –

Digital signature has been replaced with electronic signature to make it a more technology neutral act. (A **digital signature** is a technique to validate the legitimacy of a digital message or a document. A valid digital signature provides the surety to the recipient that the message was generated by a known sender, such that the sender cannot deny having sent the message. An **electronic signature** or e-signature indicates either that a person who demands to have created a message is the one who created it. )

- It elaborates on offenses, penalties, and breaches.
- It outlines the Justice Dispensation Systems for cyber-crimes.

- It defines in a new section that *cyber café* is any facility from where the access to the internet is offered by any person in the ordinary course of business to the members of the public.
- It provides for the constitution of the Cyber Regulations Advisory Committee.
- It is based on The Indian Penal Code, 1860, The Indian Evidence Act, 1872, The Bankers' Books Evidence Act, 1891, The Reserve Bank of India Act, 1934, etc.
- It adds a provision to Section 81, which states that the provisions of the Act shall have overriding effect. The provision states that *nothing contained in the Act shall restrict any person from exercising any right conferred under the Copyright Act, 1957.*

## **Application of the IT Act**

As per the sub clause (4) of Section 1, *nothing in this Act shall apply to documents or transactions specified in First Schedule.* Following are the documents or transactions to which the Act shall not apply –

- **Negotiable Instrument** (Other than a cheque) as defined in section 13 of the Negotiable Instruments Act, 1881;
- A **power-of-attorney** as defined in section 1A of the Powers-of-Attorney Act, 1882;
- A **trust** as defined in section 3 of the Indian Trusts Act, 1882;
- A **will** as defined in clause (h) of section 2 of the Indian Succession Act, 1925 including any other testamentary disposition;
- Any **contract** for the sale or conveyance of immovable property or any interest in such property;
- Any such class of documents or transactions as may be notified by the Central Government.

## **IT Act 2000 Provisions:**

Information technology is one of the important law relating to Indian cyber laws. In May 2000, both the houses of the Indian Parliament passed the Information Technology Bill. The Bill received assent of the President in August 2000 and came to be known as the Information Technology Act, 2000. Cyber laws are contained in the IT Act, 2000. This act is helpful to promote business with the help of internet. It contains set of rules and regulations which apply on any electronic business transaction.

It is “An Act to provide legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as “electronic commerce” which involve the use of alternatives to paper-based methods of communication and storage of information, to facilitate electronic filing of documents with the Government agencies and further to amend the Indian Penal Code, the Indian Evidence Act, 1872, the Bankers' Books Evidence Act, 1891 and the Reserve Bank of India Act, 1934 and for matters connected therewith or incidental thereto”.

## **IT Act, 2000 focuses on three main highlights:**

- Providing legal recognition to the transactions which are carried out through electronic means or use of Internet.
- Empowering the government departments to accept filing, creating and retention of official documents in the digital format and
- To amend outdated laws and provide ways to deal with cybercrimes. 1. Objectives of IT Act 2000:

### **The objectives of IT Act 2000:**

- To give legal recognition to any transaction which is done by electronic way or use of internet? b. To give legal recognition to digital signature for accepting any agreement via computer.
- To provide facility of filling documents online relating to school admission or registration in employment exchange.
- According to I.T. Act 2000, any company can store their data in electronic storage.
- To stop computer crime and protect privacy of internet users.
- To give more power to IPO, RBI and Indian Evidence act for restricting electronic crime.
- To give legal recognition for keeping books of accounts by bankers and other companies in electronic form.

### **Copyright Act:**

The exclusive right given by law for a certain term of years to an author, composer etc. (or his assignee) to print, publish and sell copies of his original work.

Copyright is a bundle of rights given by the law to the creators of literary, dramatic, musical and artistic works and the producers of cinematograph films and sound recordings. The rights provided under Copyright law include the rights of reproduction of the work, communication of the work to the public, adaptation of the work and translation of the work. The scope and duration of protection provided under copyright law varies with the nature of the protected work.

The objective of copyright is to promote the public good by encouraging and fostering cultural and scientific activity. Copyright protects cultural works, the creative expression of thoughts and feelings. These works are in a variety of forms, art works, music, novels and poetry. They are the expression of a culture – its heritage, which is built on by each generation adding their own perspective to the existing culture, which will enrich the lives of generations to come.

## Duration of copyright protection under the Copyright Act 1957

<ul style="list-style-type: none"><li>• Literary</li><li>• dramatic,</li><li>• musical and</li><li>• artistic works</li></ul>	Lifetime of the author + sixty years from the beginning of the calendar year next following the year in which the author dies.
<ul style="list-style-type: none"><li>• Anonymous and pseudonymous works</li><li>• Posthumous work</li><li>• Cinematograph films</li><li>• Sound records</li><li>• Government work</li><li>• Public undertakings</li><li>• International Agencies</li><li>• photographs</li></ul>	Until sixty years from the beginning of the calendar years next following the year in which the work is first published

## Requirements and Procedure for Copyright

1. Name, address and nationality of the applicant
2. Name, address and nationality of the author of the work
3. Nature of applicant's interest in the copyright i.e. OWNER / LICENSEE etc.
4. Title of the work
5. A declaration signed by the author (if different from the applicant)
6. Language of the work
7. Whether the work is published or unpublished
8. If the work is published, year and country of first publication and name, address and nationality of the publisher
9. Name, address and nationality of any other person authorized to assign or license the rights in the copyright
10. Power of attorney for the firm
11. Six hard copies of the work and three soft copies
12. (For computer programs – 3 copies of the program on CD ROMs)

### *Copyright Term:*

In most cases, the term of copyright is the lifetime of the author plus 60 years thereafter. There are some notable exceptions as given below:

1. Broadcasting organization has rights with respect to their broadcasts. The term of this right is 25 years from the beginning of the calendar year following the year in which the broadcast is made.
2. Performers have some special rights in relation to their performance. These rights are for a period of 50 years from the beginning of the calendar year following the year of the first performance.



3. In case of posthumous publications, the rights stand for a period of 60 years after the publication.

### *Infringement of Copyright:*

A copyright grants protection to the creator of an original work and prevents such work from being copied or reproduced without consent. The creator of a work can prohibit anyone from

- i. Reproducing the work in any form, such as print, sound, video, etc.,
- ii. Recording the work in compact disks, cassettes, etc.,
- iii. Broadcasting it in any form,
- iv. Translating it into other languages, and
- v. Using the work for a public performance, such as a stage drama or musical performance.

A copyright is infringed when someone, without the permission of the copyright holder, does any of the above, which only the copyright holder has the exclusive right to do.

### **Patent Law:**

A **patent** is a form of intellectual property. A patent gives its owner the right to exclude others from making, using, selling, and importing an invention for a limited period of time, usually twenty years. The patent rights are granted in exchange for an enabling public disclosure of the invention. People who are employed to do research are often obligated by their employment contracts to assign inventions to their employer. In most countries patent rights fall under civil law and the patent holder needs to sue someone infringing the patent in order to enforce their rights.

### **Procedure for patent registration**

1. **Write down the invention (idea or concept) with as much details as possible:** Area of invention, Description of the invention what it does, How does it work, Advantages of the invention
2. **Include drawings, diagrams or sketches explaining working of invention**
3. **Check whether the invention is patentable subject matter**
4. **Patentability search:** Novelty, Industrial application
5. **Decide whether to go ahead with patent**
6. **Draft (write) patent application:** In case you are at very early stage in the research and development for your invention, then you can go for **provisional application**. It gives following benefits: Secures filing date, 12 months of time to file complete specification, Low cost
7. **Publication of the application:** Up on filing the complete specification along with application for patent, the application is published after 18 months of first filing.
8. **Request for examination:** Patentable subject matter, Novelty, Industrial application
9. **Respond to objections**

## 10. Clearing all objections

## 11. Grant of patent

### **Intellectual property**

**IP** is a category of property that includes intangible creations of the human intellect, and primarily encompasses copyrights, patents, and trademarks. It also includes other types of rights, such as trade secrets, publicity rights, moral rights, and rights against unfair competition. Artistic works like music and literature, as well as some discoveries, inventions, words, phrases, symbols, and designs, can all be protected as intellectual property. It was not until the 19th century that the term "intellectual property" began to be used, and not until the late 20th century that it became commonplace in the majority of the world.

The main purpose of intellectual property law is to encourage the creation of a large variety of intellectual goods. To achieve this, the law gives people and businesses property rights to the information and intellectual goods they create – usually for a limited period of time. This gives economic incentive for their creation, because it allows people to profit from the information and intellectual goods they create

### **Types of Intellectual Property/copyright property:**

Modern copyright laws serve to protect a variety of intellectual property ranging from songs and jingles to computer software and proprietary databases. The intellectual property protected under copyright laws can be classified as follows:

#### *Literary Works:*

These cover published works including books, articles, journals, and periodicals, as well as manuscripts. Even adaptations, translations, and abridgements are taken as original works and are protected under copyright law. Very importantly, these also cover computer programs and computer databases.

#### *Dramatic Works:*

A dramatic work is a work capable of being physically performed. It need not be fixed in writing or otherwise. Some examples of dramatic works are a piece of recitation, choreographic work, elements of a dance or ballet, costumes, and scenery associated with a drama, etc.

#### *Musical Works:*

A musical work means a work consisting of music and it includes graphical notation of such a work. The words in a song and the music have separate rights and the rights cannot be merged.

#### *Artistic Works:*

Artistic works are works such as paintings, sculptures, drawings, engravings, photographs, and architectural works, irrespective of judgments on their artistic quality.

#### *Cinematographic Films and Sound Recordings:*

Cinematography covers any method used to record moving images, including video recording and recordings of short clips using webcams and cell-phones. Soundtracks of movies also come under cinematography. Similarly, stand-alone sound recordings are also protected under copyright laws.



## **IPR (Intellectual Property Rights):**

Intellectual property rights are like any other property right. They allow creators, or owners, of patents, trademarks or copyrighted works to benefit from their own work or investment in a creation. The importance of intellectual property was first recognized in the Paris Convention for the Protection of Industrial Property (1883) and the Berne Convention for the Protection of Literary and Artistic Works (1886). Both treaties are administered by the World Intellectual Property Organization (WIPO).

## **Difference between Copyright & Patent:**

BASIS FOR COMPARISON	COPYRIGHT	PATENT
Meaning	Copyright means a form of protection conferred to the creator of original work, which excludes others from performing, selling or using the work.	Patent means the proprietary rights endowed to the inventor which excludes others from making, utilizing or trading the invention for a set period.
Subject matter	Expression	Ideas
Governing Act	Indian Copyright Act, 1957	Indian Patent Act, 2005
Covers	Artistic and literary works ETC	Inventions
Term	60 years	20 years

## **CYBER LAW IN INDIA:**

In India, cyber laws are contained in the Information Technology Act, 2000 ("IT Act") which came into force on October 17, 2000. The main purpose of the Act is to provide legal recognition to electronic commerce and to facilitate filing of electronic records with the Government.

The following Act, Rules and Regulations are covered under cyber laws:

1. Information Technology Act, 2000
2. Information Technology (Certifying Authorities) Rules, 2000
3. Information Technology (Security Procedure) Rules, 2004
4. Information Technology (Certifying Authority) Regulations, 2001

## **Need for cyber law in India**

Firstly, India has an extremely detailed and well-defined legal system in place. Numerous laws have been enacted and implemented and the foremost amongst them is The Constitution of India. We have inter alia, amongst others, the Indian Penal Code, the Indian Evidence Act 1872, the Banker's Book Evidence Act, 1891 and the Reserve Bank of India Act, 1934, the Companies Act, and so on. However the arrival of Internet signaled the beginning of the rise of new and complex legal issues.

**IT Acts in India** includes data, information, computer and computer network as a part of cyber crime. To know what is cyber law it is necessary to understand that what does cyber law in India deals with and includes. Role of law in cyber world is related to the below:

- Cyber crimes
- Electronic and digital signatures
- Intellectual property
- Data protection and privacy

In cyber crime computer can either be a tool, target or both.

## Software license

- A software license is a document that provides legally binding guidelines for the use and distribution of software.
- Software licenses typically provide end users with the right to one or more copies of the software without violating copyrights. The license also defines the responsibilities of the parties entering into the license agreement and may impose restrictions on how the software can be used. Software licensing terms and conditions usually include fair use of the software, the limitations of liability, warranties and disclaimers and protections if the software or its use infringes on the intellectual property rights of others.
- Software licenses are proprietary, free or open source, the distinguishing feature being the terms under which users may redistribute or copy the software for future development or use.
- Free and open source licenses include free software with no monetary usage charge, but users, or licensees, are legally required to abide by agreement terms. Generally purchased software is sold with proprietary licenses, and despite much legal jargon, many license term particulars have no legal basis or are unenforceable.
- Free licenses provide a licensee with rights similar to the original owner. For example, a licensee may copy, modify and distribute creative works, provided a free license is obtained.
- Some forms of licensing, such as the General Public License (GPL), permit licensees to sell software or digital products. Proprietary licenses are obtained through End User License Agreements (EULA). Without a software licensing agreement, the licensee is strictly prohibited from using licensable media.
- Free or open source licenses do not always require signed agreements. However, if a licensee or owner skips this option, the licensee may not realize all open source licensing benefits because an agreement is usually required to redistribute free or open source copyrighted material.
- With proprietary software, the original copyright owner maintains ownership. By granting a license, which is not always legally binding, the copyright owner is more or less renting or leasing copyrighted materials to licensees.

- A software license agreement details exclusive and reserved copyright owner rights. Licensees failing to adhere to this agreement section may be held liable under copyright law.

## **Semiconductor Law:**

The Semiconductor Integrated Circuit Layout-Design Act, 2000, protects original, inherently distinctive layout-designs that have not been previously commercially exploited. Registration is a necessary pre-requisite for protection. The Semiconductor Integrated Circuits Layout-Design Act, 2000 gives recognition to a new form of intellectual property, namely, the ‘layout-designs’ used in semiconductor integrated circuits.

A **semiconductor** is a material which has electrical conductivity to a degree between that of a metal such as copper and that of an insulator such as glass. Semiconductors are the foundation of modern solid state electronics, including transistors, solar cells, light-emitting diodes (LEDs), quantum dots and digital and analog integrated circuits.

A semiconductor may have a number of unique properties, one of which is the ability to change conductivity by the addition of impurities called “doping” or by interaction with another phenomenon, such as an electric field or light; this ability makes a semiconductor very useful for constructing a device that can amplify, switch, or convert an energy input. The modern understanding of the properties of a semiconductor relies on quantum physics to explain the movement of electrons inside a lattice of atoms.

## **Legal Provisions in India**

The Semiconductor Integrated Circuit Layout-Design Act, 2000, protects original, inherently distinctive layout-designs that have not been previously commercially exploited. Registration is a necessary pre-requisite for protection. The Semiconductor Integrated Circuits Layout-Design Act, 2000 gives recognition to a new form of intellectual property, namely, the ‘layout-designs’ used in semiconductor integrated circuits<sup>[1]</sup> as has been defined u/s 2(h) of the Act.

Exchange of information on a worldwide basis now can occur instantaneously because it can be stored so readily and in such quantities in semiconductor integrated circuits or chips as they are commonly known, has far reaching implications for privacy, international relations, national security and defense. Chips are often referred to as ‘the crude oil of the information age’.

## **Background of the Semiconductor Act, 2000**

The need for a sui generis form of protection developed primarily as a result of chip piracy, which threatened to undercut the vitality of the semiconductor industry. Chip pirates could sell identical chips for lower prices than could the companies that originally designed them. This caused companies that engaged in chip research and development to cut prices to compete with pirated chips.

Protection to semiconductor chips was first given in the US through Semiconductor Chip Protection Act(SCPA) in 1984 and its impact was felt virtually throughout the world. Japan introduced similar protection in 1985, viz., Japanese Circuit Layout Right Act (JCLRA).

## Highlights of the Indian Legislation

- There is protection of semiconductor integrated circuits layout and designs by a registration process.
- There is a mechanism for distinguishing which layout designs can be protected.
- There are rules to prohibit registration of layout designs which are not original or which have been commercially exploited.
- Protection of 10 years period is provided to layout designs.
- Provisions regarding infringement and evidence of validity are mentioned.
- There are provisions for determining payment of royalty for registered layout designs in case of innocent or unintentional infringement.
- Penalties in the form of imprisonment and fine are imposed for willful infringement and other offences in the Act.
- The Registrar is appointed for the purpose of administration and the Appellate Board is established for facilitating the legal objective.



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