In the Presntation

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WHAT IS STEGANOGRAPHY?

- **Steganography** is the art and science of writing hidden messages in such a way that no one, apart from the sender and intended recipient, suspects the existence of the message, a form of security through obscurity.

- The word *steganography* is of Greek origin and means "concealed writing" from the Greek words *steganos* meaning "covered or protected", and *graphein* meaning "writing".

- **"Steganography means hiding one piece of data within another".**

PHYSICAL TECHNIQUES

- Physical Techniques
  - Hidden messages within wax tablets
  - Hidden messages on messenger's body
  - Hidden messages on paper written in secret inks
  - Messages written in Morse code on knitting yarn and then knitted into a piece of clothing worn by a courier
  - Messages written on envelopes in the area covered by postage stamps.

DIGITAL TECHNIQUES

- Digital Techniques
  - Concealing messages within the lowest bits of <u>noisy</u> images or sound files.
  - <u>Chaffing and winnowing</u>.
  - Modifying the echo of a sound file (Echo Steganography)
  - Including data in ignored sections of a file, such as after the logical end of the carrier file.

STEGANOGRAPHY

V/S
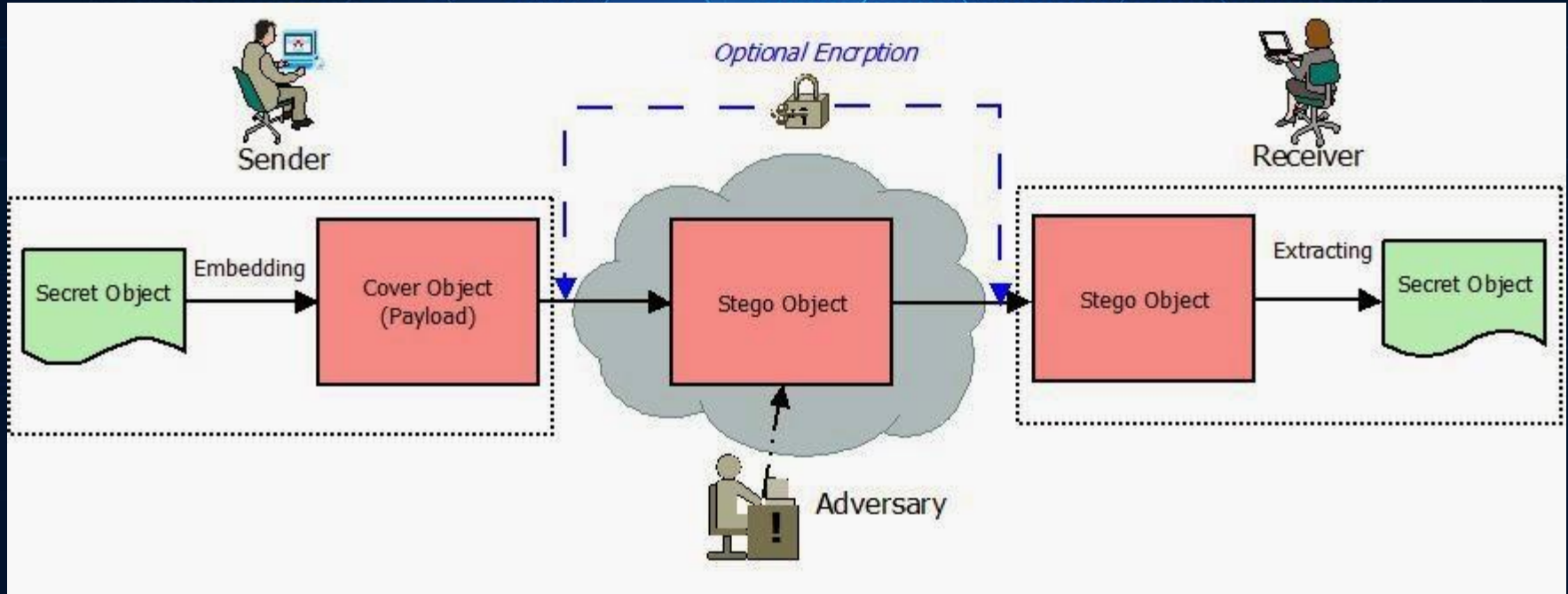
CRYPTOGRAPHY

STEGANOGRAPHY V/S CRYPTOGRAPHY

Steganography

- Unknown message passing

- Little known technology

- Technology still being develop for certain formats

- Steganography does not alter the structure of the secret message
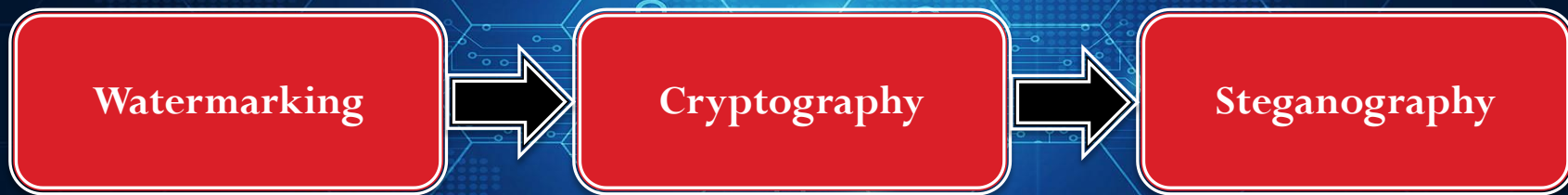
Cryptography

- Known message passing

- Common technology

- Most of algorithm known by all

- Cryptography alter the structure of the secret message

BASIC STEGANOGRAPHY MODEL

EVOLUTION

Watermarking → Cryptography → Steganography

STEGANOGRAPHY TERMS

- **Carrier or Cover File** - A Original message or a file in which hidden information will be stored inside of it .

- **Stego-Medium** - The medium in which the information is hidden.

- **Embedded or Payload** - The information which is to be hidden or concealed.

- **Steganalysis** - The process of detecting hidden information inside a file.

TYPES OF STEGANOGRAPHY

- Types Of Steganography
  - Text Steganography
  - Image Steganography
  - Audio Steganography

TEXT STEGANOGRAPHY

- Text steganography can be applied in the digital makeup format such as PDF, digital watermark or information hiding

- It is more difficult to realize the information hiding based on text. The simplest method of information hiding is to select the cover first, adopt given rules to add the phraseological or spelling mistakes, or replace with synonymy words.

- Ex: TextHide hides the information in the manner of text overwriting and words' selection.

TEXT STEGANOGRAPHY METHODS

- ☐ Text Steganography in Markup Languages[HTML]
- ☐ Text Steganography in Specific characters in words
- ☐ Line shifting Method
- ☐ Word shifting
- ☐ Open spaces
- ☐ Semantic methods
- ☐ Character Encoding

EXAMPLE

Since everyone can read, encoding text in neutral sentences is doubtfully effective

Since Everyone Can Read, Encoding Text In Neutral Sentences Is Doubtfully Effective

'Secret inside'

IMAGE STEGANOGRAPHY

- Using image files as hosts for steganographic messages takes advantage of the limited capabilities of the human visual system.

- Some of the more common method for embedding messages in image files can be categorized into two main groups, image domain methods and transform domain methods.

- Least significant bit (LSB) insertion is a common, simple approach to embedding information in a cover image

DEMO OF IMAGE STEGANOGRAPHY

AUDIO STEGANOGRAPHY

- Embedding secret messages into digital sound is known as audio Steganography.

- Audio Steganography methods can embed messages in WAV, AU, and even MP3 sound files.

- The properties of the human auditory system (HAS) are exploited in the process of audio Steganography

Applications

- ☐ Confidential communication and secret data storing.
- ☐ Protection of data alteration.
- ☐ Access control system for digital content distribution.
- ☐ Media Database systems.
- ☐ Usage in modern printers
- ☐ Alleged use by terrorists
- ☐ Alleged use by intelligence services

STEGANOGRAPHY TOOLS

- Steganos
- S-Tools (GIF, JPEG)
- StegHide (WAV, BMP)
- Invisible Secrets (JPEG)
- JPHide
- Camouflage
- Hiderman

THANK YOU