



# STEGANOGRAPHY



# INTRODUCTION

Art and  
science of  
writing hidden  
messages

A form of  
security  
through  
obscurity

No one apart  
from the  
sender and  
intended  
recipient,  
suspects the  
existence of  
the message



Steganós

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Covered

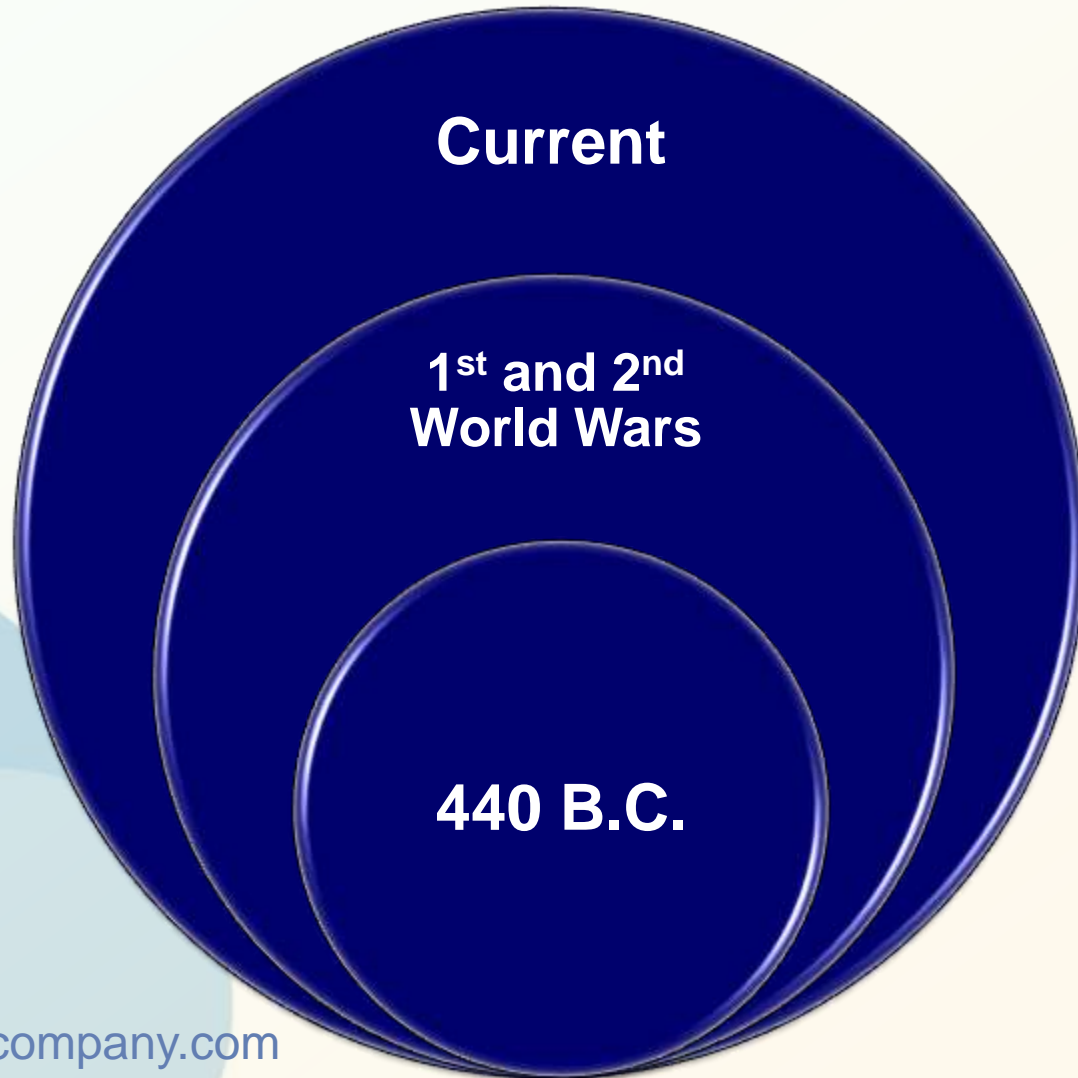
Graptos

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Writing

**ETYMOLOGY**

# HISTORY OF STEGANOGRAPHY





**Cryptography**

**Steganography**

**Watermarking**

**EVOLUTION**

# ADVANTAGE OF STEGANOGRAPHY OVER CRYPTOGRAPHY



Messages do not  
attract attention to  
themselves

Protects both  
messages and  
communicating  
parties

# TYPES OF STEGANOGRAPHY

Steganography In Text/Documents

Steganography In Video

Steganography In Audio

Steganography In Images

A yellow notepad with a dashed border and a punch hole in the top left corner. A black triangle is positioned on the left side of the notepad. Four white, rounded rectangular text boxes are stacked vertically on the right side of the notepad, each containing a term related to steganography.

Carrier or Cover File

Stego-Medium

Embedded or Payload

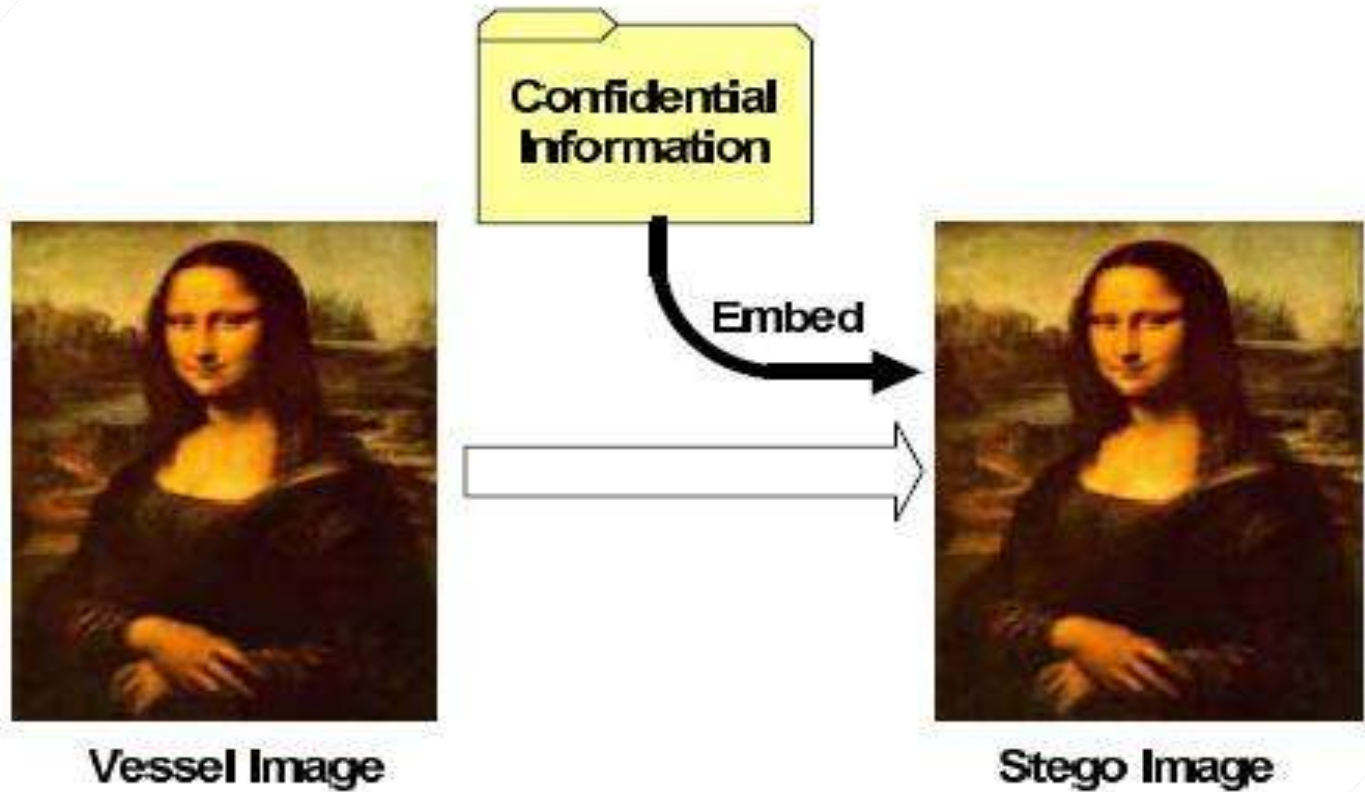
Steganalysis

**STEGANOGRAPHY TERMS**



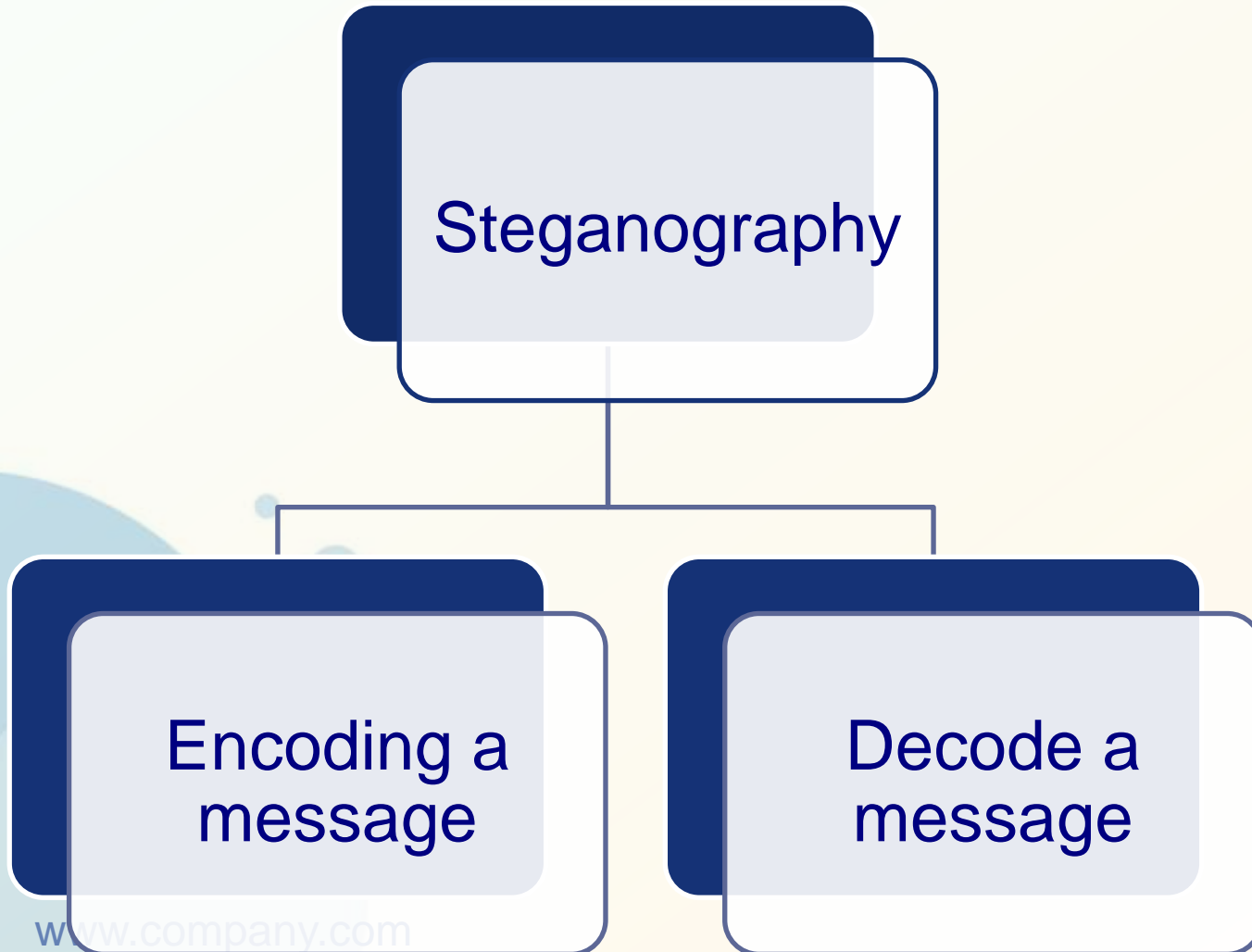
VIDEO





# HOW IT WORKS

# STEGANOGRAPHY STEPS



Embedded  
Data

The diagram is set on a light yellow background with a dashed border. In the top-left corner, there is a small circular hole. On the left side, two dark blue ovals are stacked vertically. The top oval contains the text 'Embedded Data' and the bottom oval contains 'Plain info'. A large grey plus sign is positioned between these two ovals. To the right of the plus sign is a large grey arrow pointing towards a large dark blue circle on the right side of the diagram. This circle contains the word 'MESSAGE' in white capital letters.



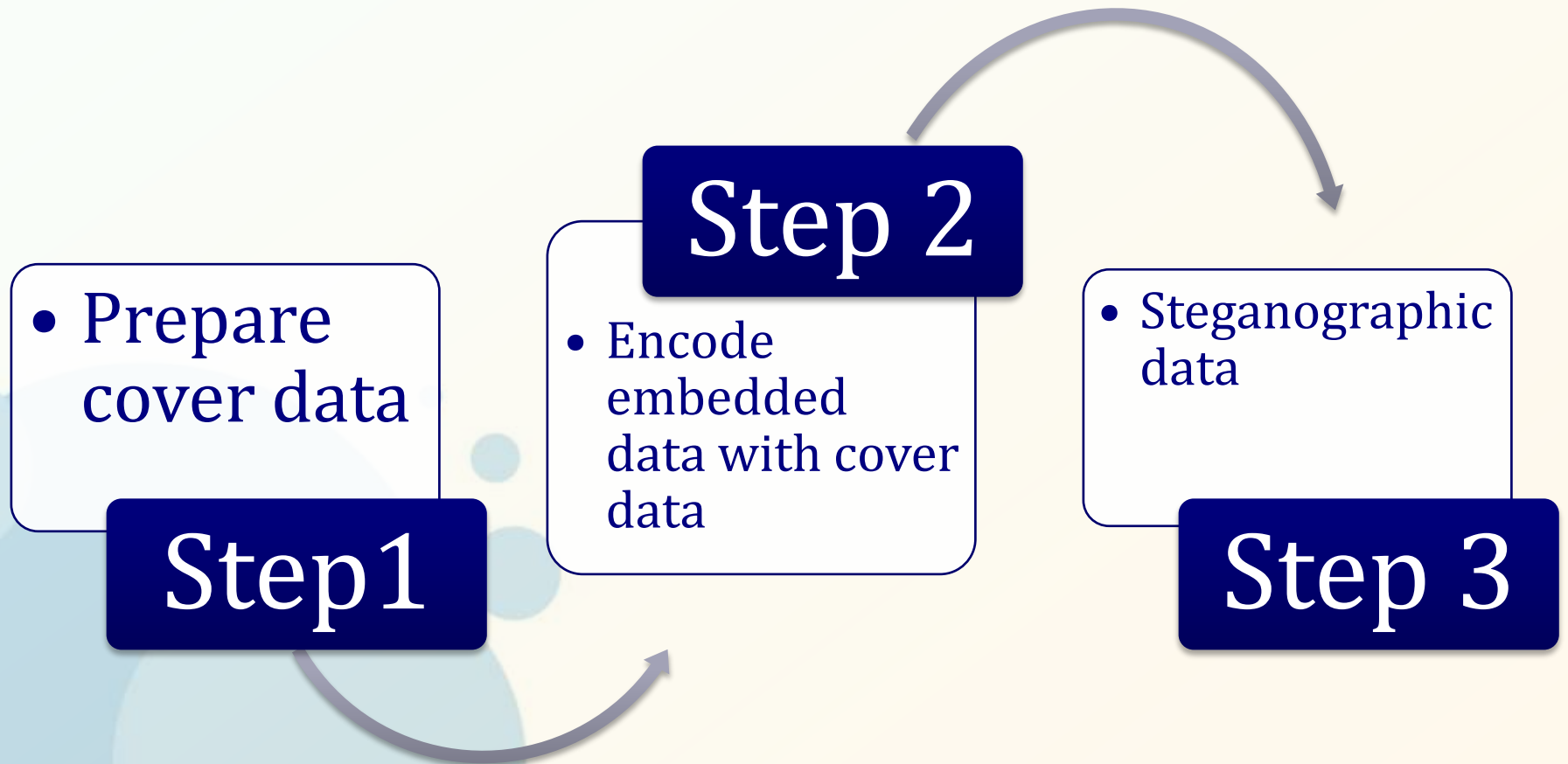
Plain info



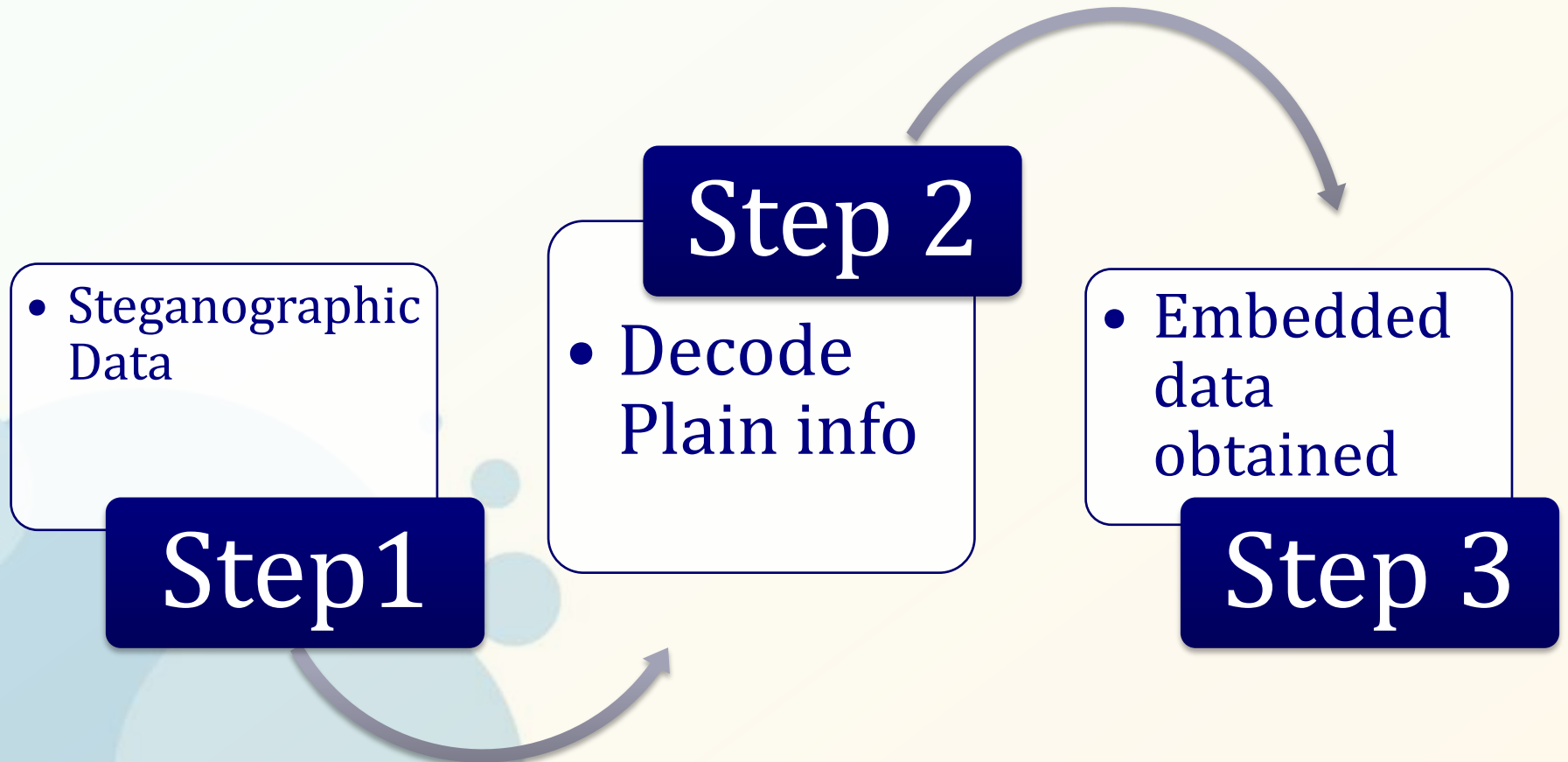
MESSAGE

**MESSAGE**

# ENCODING



# DECODING



# STEGANALYSIS

Art and Science of detecting hidden messages

Just discover Steganography

Not deals with decrypting the data



Line Shift Coding

Word Shift Coding

Feature Coding

Least Significant Bit Insertion

Low bit encoding

Masking and Filtering

# STEGANOGRAPHY TECHNIQUES




# STEGANOGRAPHY USING LEAST SIGNIFICANT BIT

```
01011010 00101011 10101011 10101010 11101011 11010100 01000111 11111001
01011010 10101101 10010111 10101111 10101011 10100111 01010110 01011011
10110111 11111011 00101011 10010101 10101000 01010100 10101010 11010101
10100100 01011000 11011010 01010101 01001001 10110000 01000010 01010100
```

**Example: Inserting the word "bomb" using LSB techniques:**

- **b = 01100010**
- **o = 01101111**
- **m = 01101101**
- **b = 01100010**

PRACTICAL



Program	Image files	Audio files	Video files	Document files
OpenPuff	BMP, JPG, PNG, TGA	Mp3, WAV	3gp, Mp4, MPEG-1, MPEG-2, VOB, SWF, FLV	Pdf
MP3Stego	-	Mp3	-	-
OpenStego	BMP, PNG	-	-	-
S-Tools	BMP, GIF	Wav	-	-
StegFS	-	-	-	-
Steganographic Laboratory (VSL)	BMP, PNG, JPG, TIFF	-	-	-
PHP-Class StreamSteganography	PNG	-	-	-

## List of some tools for Steganography

# USAGE IN MODERN PRINTERS

Tiny yellow dots are added to each page



Printer serial numbers date and time stamps  
are encoded on yellow dots



EXAMPLE: HP and Xerox color laser printers.


# ILLEGAL USAGE



HACKERS

TERRORISTS

CRIMINALS

A yellow rectangular tag with rounded corners and a dashed border. A circular hole is punched in the top-left corner. The word "CONCLUSION" is printed in a bold, black, serif font in the center of the tag. The tag is set against a background of overlapping light brown and tan geometric shapes.

**CONCLUSION**

# QUERIES



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