



Digital Forensics

MO447 / MC919

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Summary

- ▶ Introduction
- ▶ Terminology
- ▶ Historical remarks
- ▶ Social Impacts
- ▶ Scientific and commercial applications

Introduction

Introduction

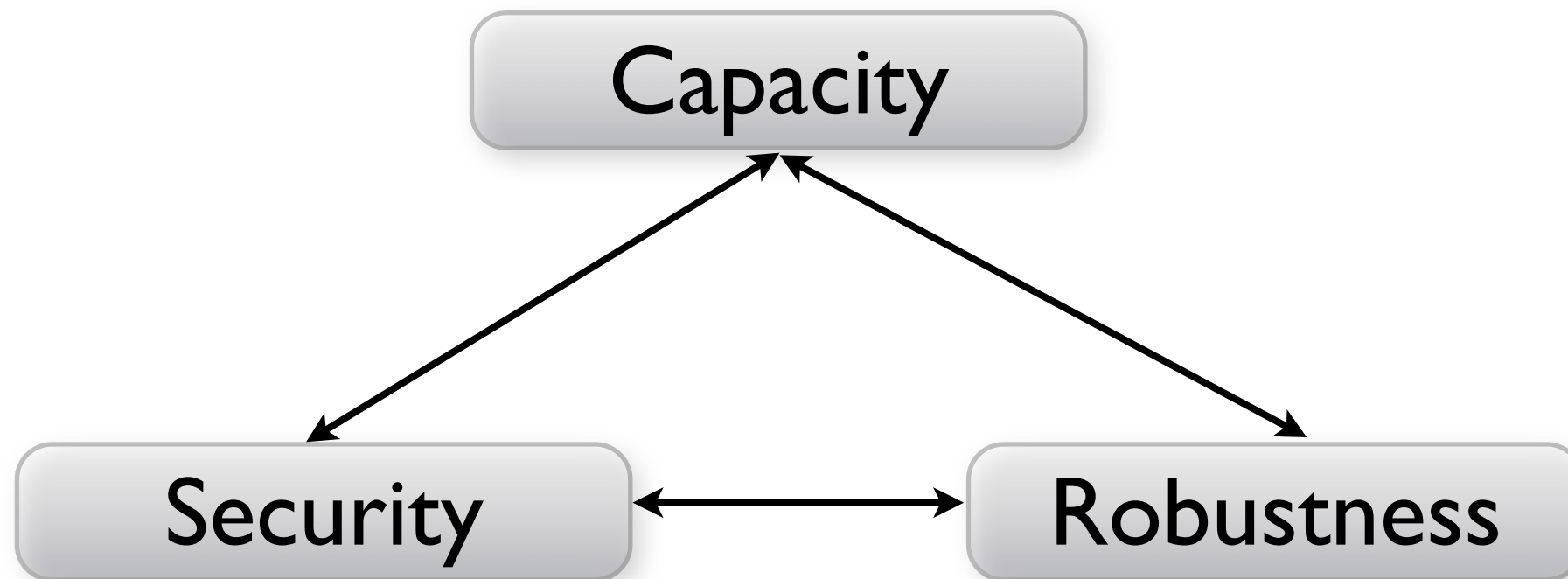
- ▶ What is **Information Hiding**?
- ▶ Common use:
 - Captioning
 - Time-stamping & Tamper-proofing
 - Watermarking
 - Communications

Terminology

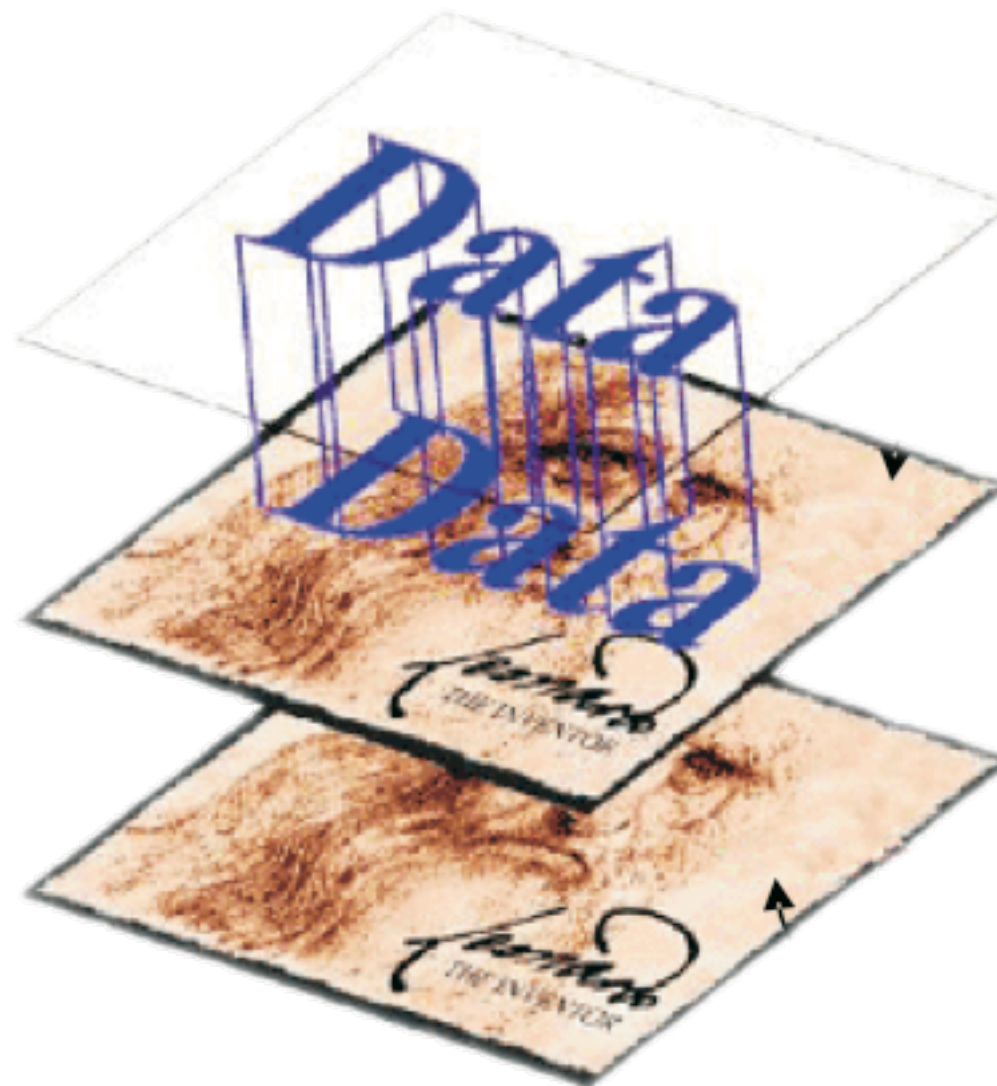
Terminology

- ▶ Information Hiding
- ▶ Cover object
- ▶ Stego object
- ▶ Stego key
- ▶ Attack

Terminology



Terminology



Message to be hidden

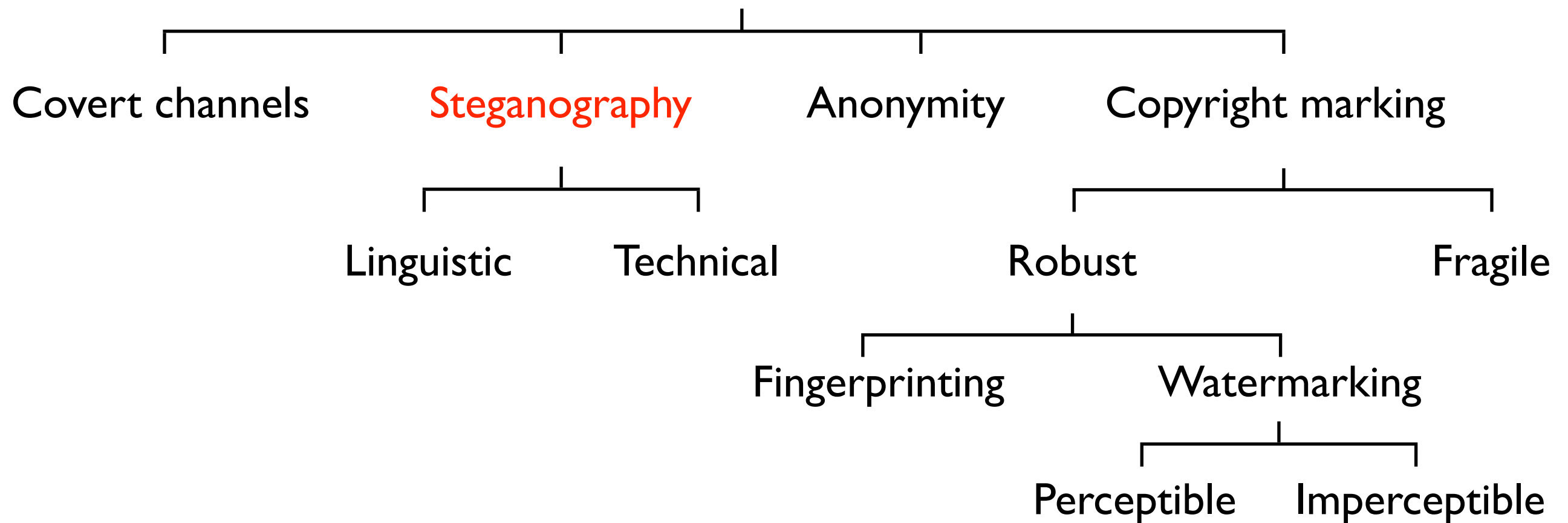
The cover image

The produce stego image

A data hiding example

Terminology

Information Hiding



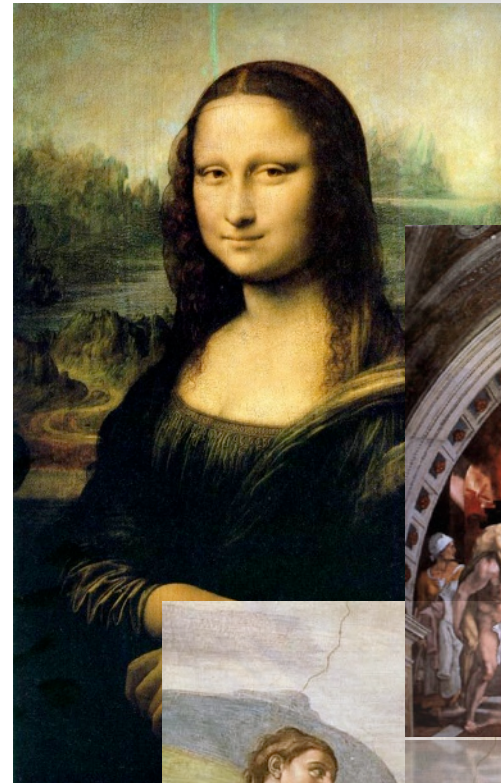
Information Hiding hierarchy

Historical Remarks

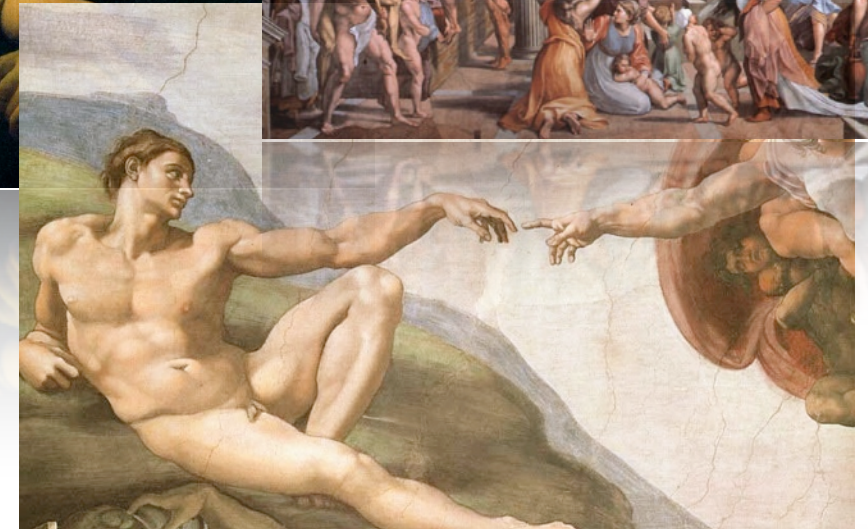
Historical remarks

- ▶ Harpagus and the hare
- ▶ Histaieus and his slave
- ▶ Demeratus and the wax tablets
- ▶ Drawings concealing information

Mona Lisa by Da Vinci



Expulsion of Heliodorus from the Temple by Raphael



Creation of Adam by Michelangelo

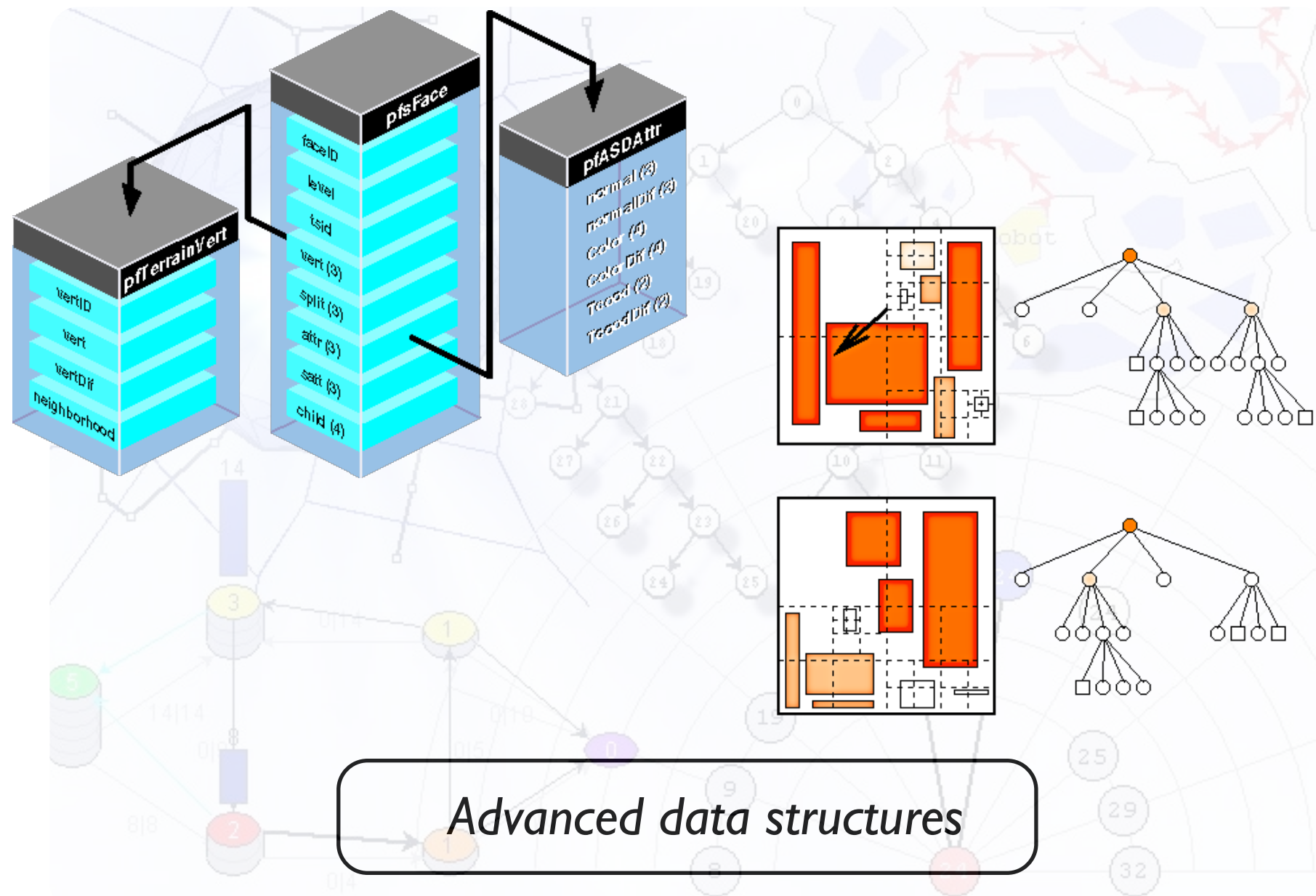
Historical remarks

- ▶ Sympathetic inks (lemon/fire, galotanic acid/copper sulfate)
- ▶ Micro-dots technology
- ▶ Null-cyphers
 - ▶ Hypteronomachia Poliphili
 - ▶ “Father Colona Passionately loves Polia”

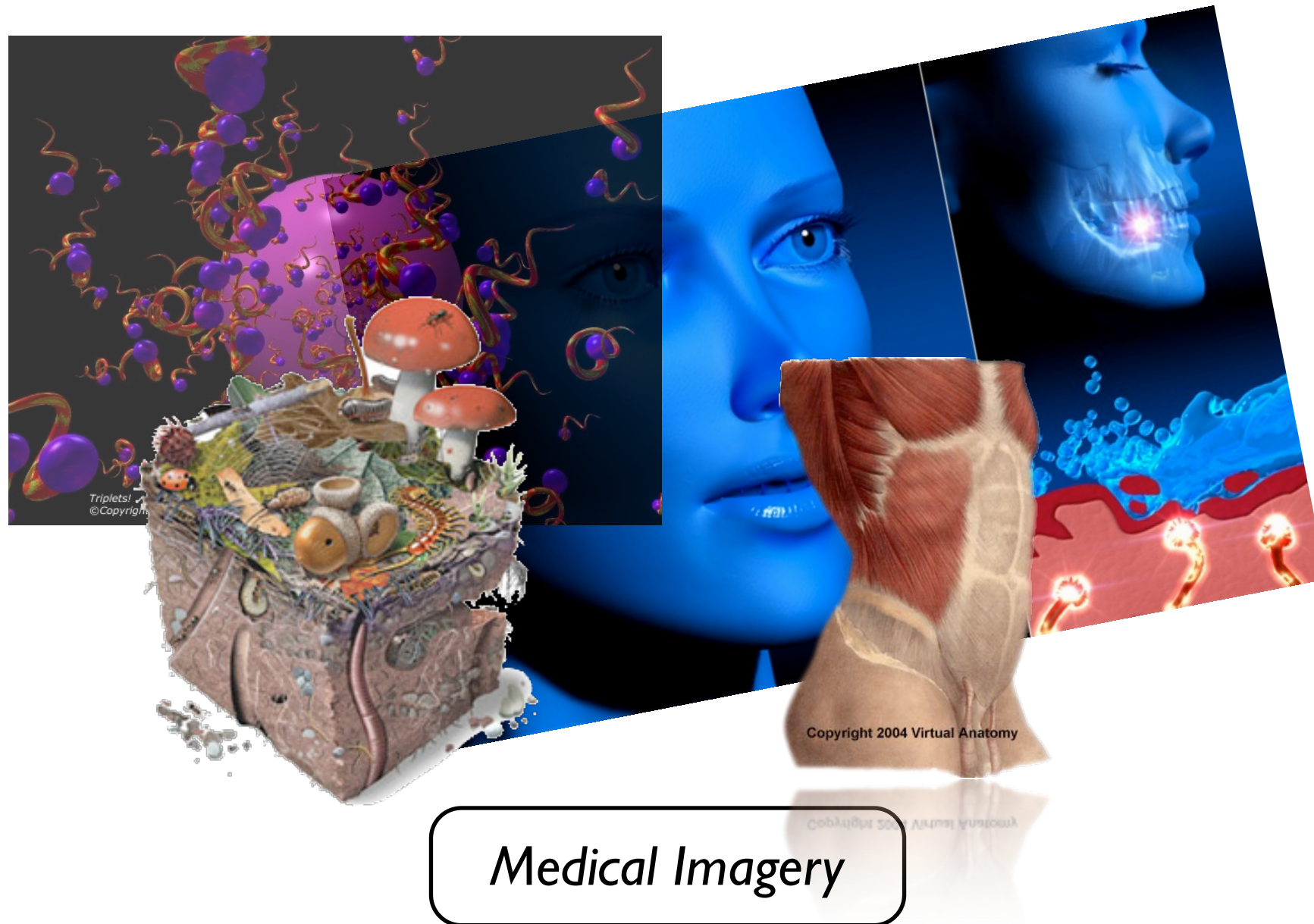


Applications

Scientific and commercial applications



Scientific and commercial applications



Scientific and commercial applications



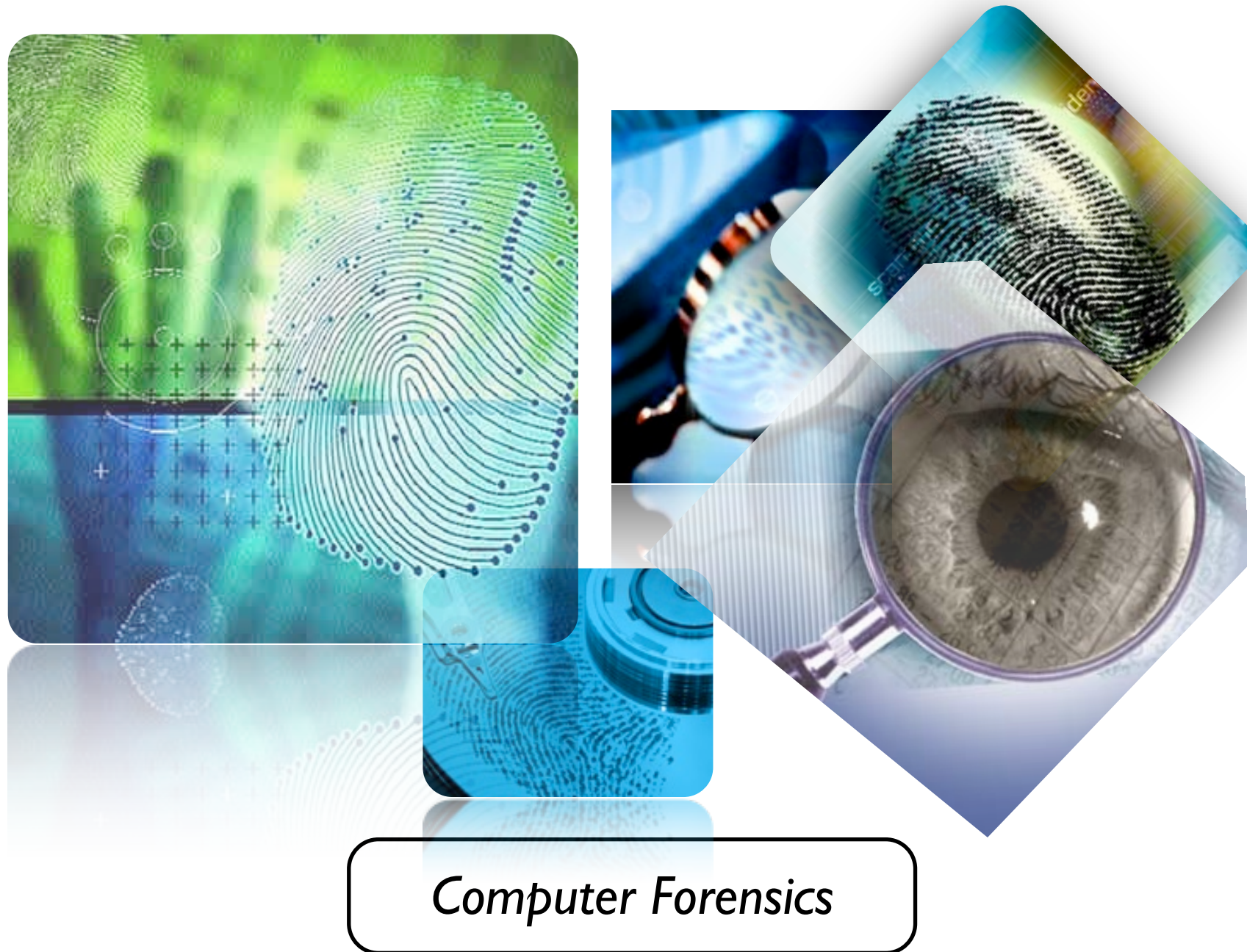
Strong watermarks

Scientific and commercial applications



Military agencies

Scientific and commercial applications



Computer Forensics

Scientific and commercial applications



Document tracking and authentication

Scientific and commercial applications



Scientific and commercial applications



Transit radar systems

Thank You!

Obrigado!