CYBER FRAUDS

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CYBER CRIME

Crime that utilizes technology, particularly (but not exclusively) the Internet and Computers.

Any criminal activity in which a computer is either -

- An instrumentality or a tool
- A target

COMPUTER AS A TOOL

- Financial crimes
- Sale of illegal articles
- Pornography
- Online gambling
- Intellectual property crime
- E-mail spoofing
- Forgery
- Cyber defamation
- Cyber stalking
- Counterfeiting

COMPUTER AS A TARGET

- Unauthorized access
- Theft of information
- E-mail bombing
- Data diddling
- Viruses, Logic bombs, Trojan attacks
- Internet time thefts
- Theft and physical damage of computer system
- Denial of Service Attacks/ DDoS

RISE OF THE MACHINES

fraud

noun | \ˈfrȯd\

Simple Definition of FRAUD

: the crime of using dishonest methods to take something valuable from another person

: a person who pretends to be what he or she is not in order to trick people

: a copy of something that is meant to look like the real thing in order to trick people

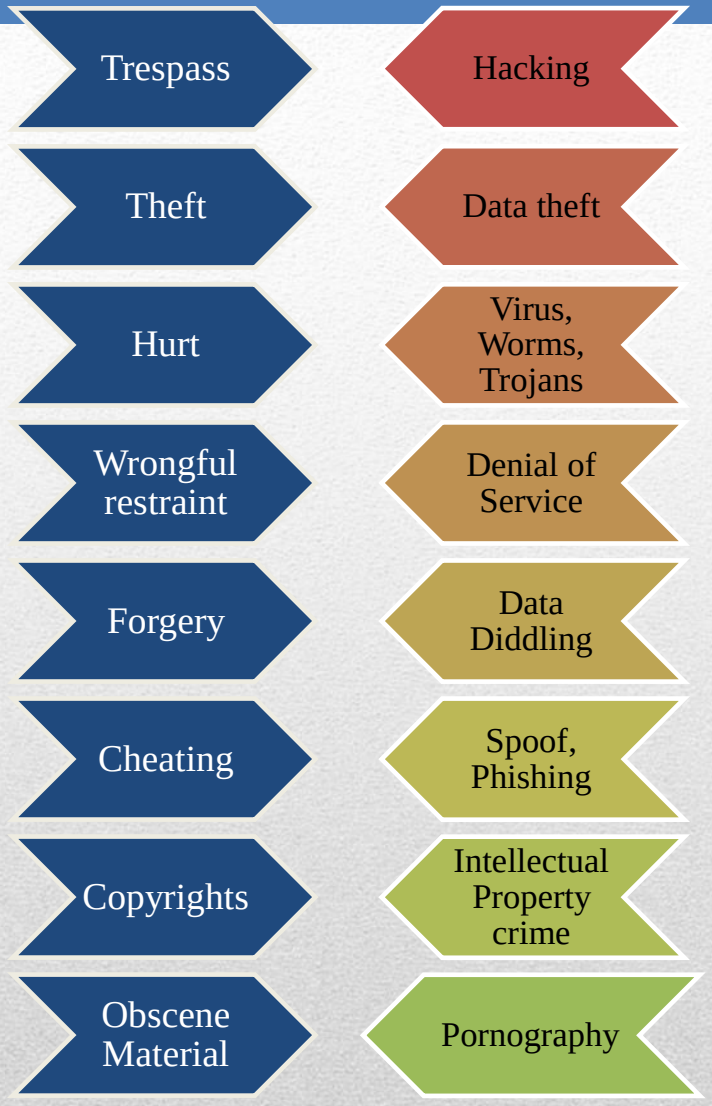
Source: Merriam-Webster's Learner's Dictionary

- ✓ Deception
- ✓ Wrongful Gain or Loss

SAD AS IT MAY SEEM, FRAUD WILL ALWAYS TAKE PLACE WHEREVER THERE IS AN OPPORTUNITY.

FRAUD TYPES

- Banking Fraud
- Fraud to get government benefits
- Counterfeiting of currency etc.
- Confidence tricks
- Creation of false companies
- Embezzlement
- Credit Card Frauds
- False advertising
- False billing
- False insurance claims
- Franchise Fraud
- Fraud upon the court
- Health Fraud
- ATM Fraud
- Identity theft
- Insurance Fraud
- Intellectual property theft
- Investment Frauds
- Marriage Fraud
- Religious Fraud
- Rigged gambling games
- Securities Frauds
- Tax Fraud
- Tax Evasion



TRADITIONAL v/s CYBER SPACE

CYBER FRAUDS

Fraud using computer/ technology compared to traditional methods

Virtual victim = Data

Vulnerabilities of technology exhaust valuable resources belonging to entity using that technology

Type of fraud is only limited by the imagination of the fraudster

- Wrongful access
- Alter by false entries (data entry level)
- Alter by conceal/ edit/ delete
- Misuse

PROBLEM SIZE

Over 40,000 incidents reported each year in India

About 30,000 Indian websites hacked every year

Over 50,000 spam email reported to CERT-In every year

Culprits - 7% neighbors or family, 5% students, 3% employee, 2.5% business competitor

69% increase in Cyber Crime

74% increase in arrests of Cyber criminals

54% criminals between 18-30 yrs. Age

Out of 12248 cases, 65% pending investigation

(2014, Crime in India, NCRB)

MySpace

164,000,000 Personal details made public

Ebay

- 145,000,000 Credentials of users copied

Heartland – Payment processor

130,000,000 Credit card scam, $110 million paid to Card Coys. to settle claims

LinkedIn

- 117,000,000 User data accessed

AOL

- 92,000,000 Screen names/ email details stolen

Dropbox

- 68,700,000 User credentials stolen

Evernote

- 50,000,000 User IDs & Passwords suspected compromised

Adobe

- 36,000,000 User IDs & Passwords used, data corrupted

Apple

- 12,367,232 FBI Laptop hacked, Apple UDIDs compromised

Sony Pictures

- 100 terrabytes Unreleased films, scripts etc. stolen

Gmail

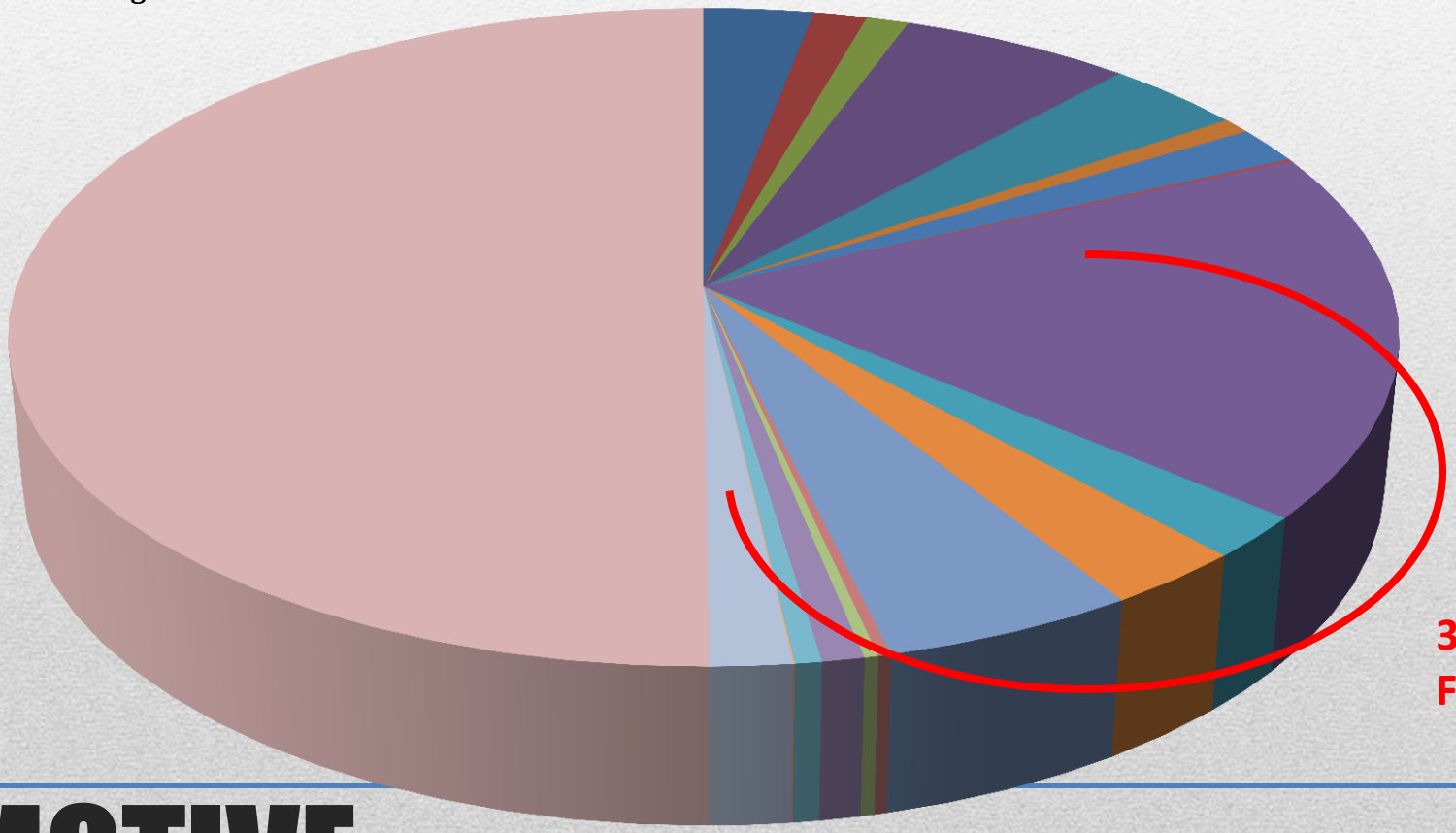
- 5,000,000 Account IDs & Passwords leaked

Twitter

- 250,000 User ID & contact info stolen

HOW SAFE ARE YOU

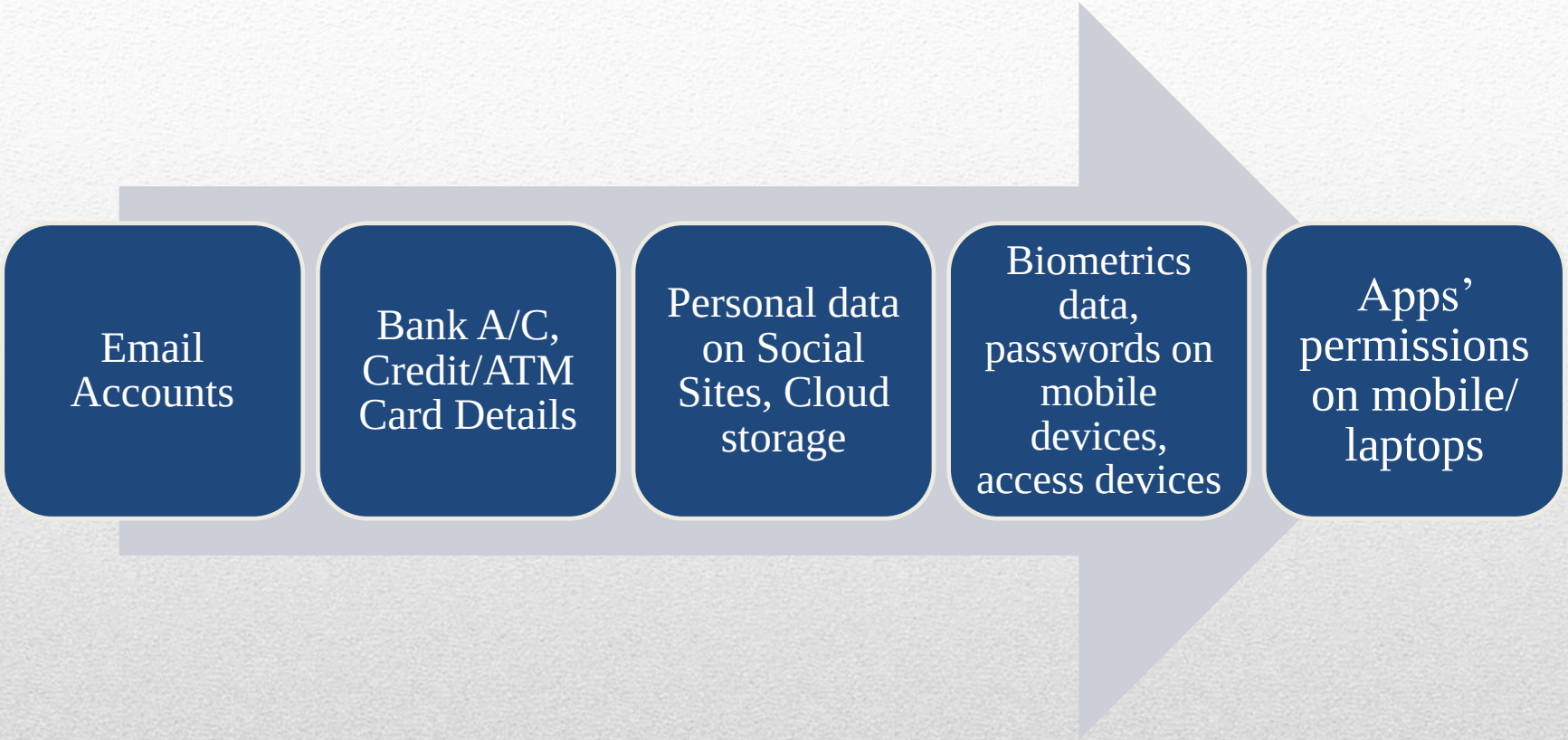
- Personal Revenge / Settling scores
- Emotional Motives like Anger, Revenge, etc
- Prank / Satisfaction of Gaining Control
- Insult to Modesty of Women
- Sexual Exploitation
- Political Motives
- Inciting Hate Crimes Against Community
- Inciting Hate Crimes Against Country
- Serious Psychiatric Illness viz. Perversion, etc
- **Greed / Financial Gain**
- **Extortion**
- **Causing Disrepute**
- **Fraud/ Illegal Gain**
- **Disrupt Public Services**
- **Sale/ Purchase of Illegal Drugs/ Items**
- **For Developing Own Business/Interest**
- **For Spreading Piracy**
- **Steal Information for Espionage**
- **Motives of Blackmailing**
- Others



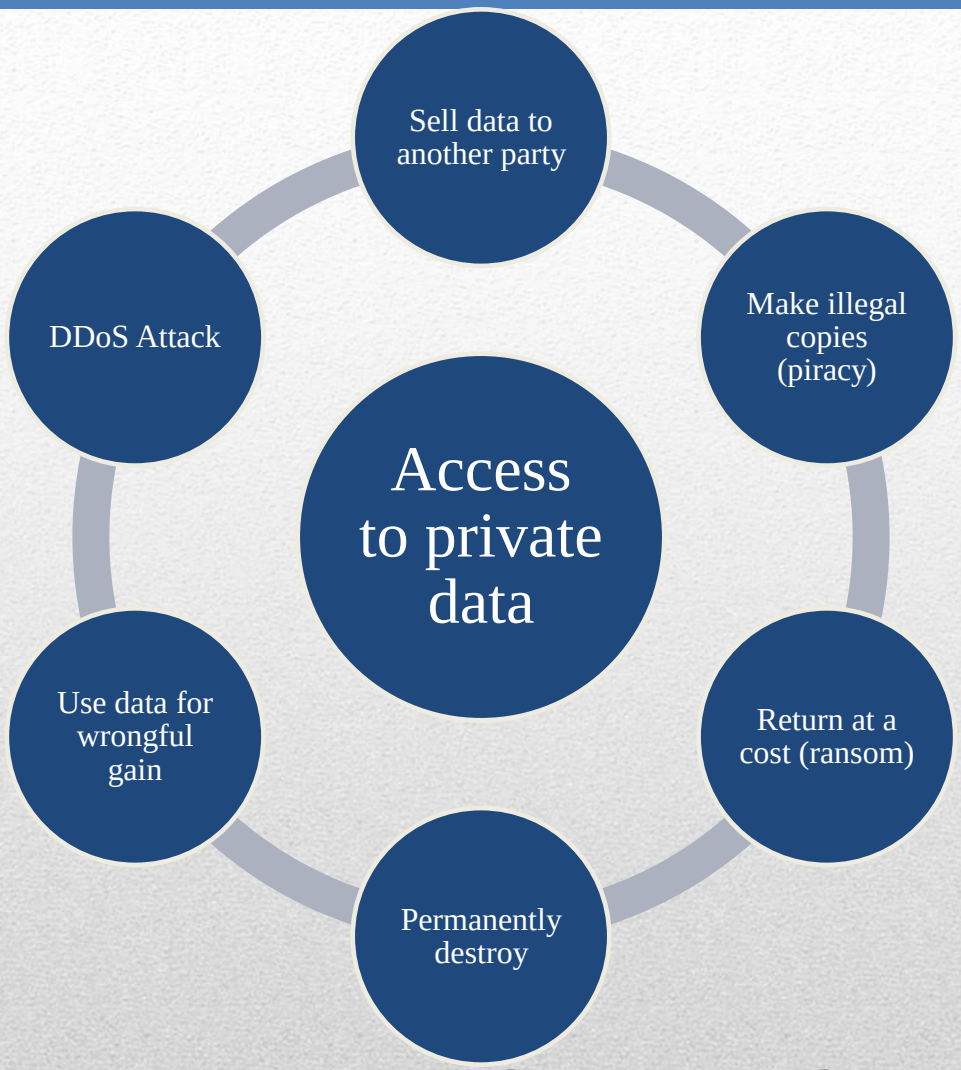
MOTIVE

- Remote operation, trans-national crimes
- Anonymity
- Growing penetration of technology – Internet of things
- Negligent/ uninformed users
- Improved connectivity
- Vulnerabilities in existing technology
- Law & LEAs still evolving

PREFERRED CHOICE

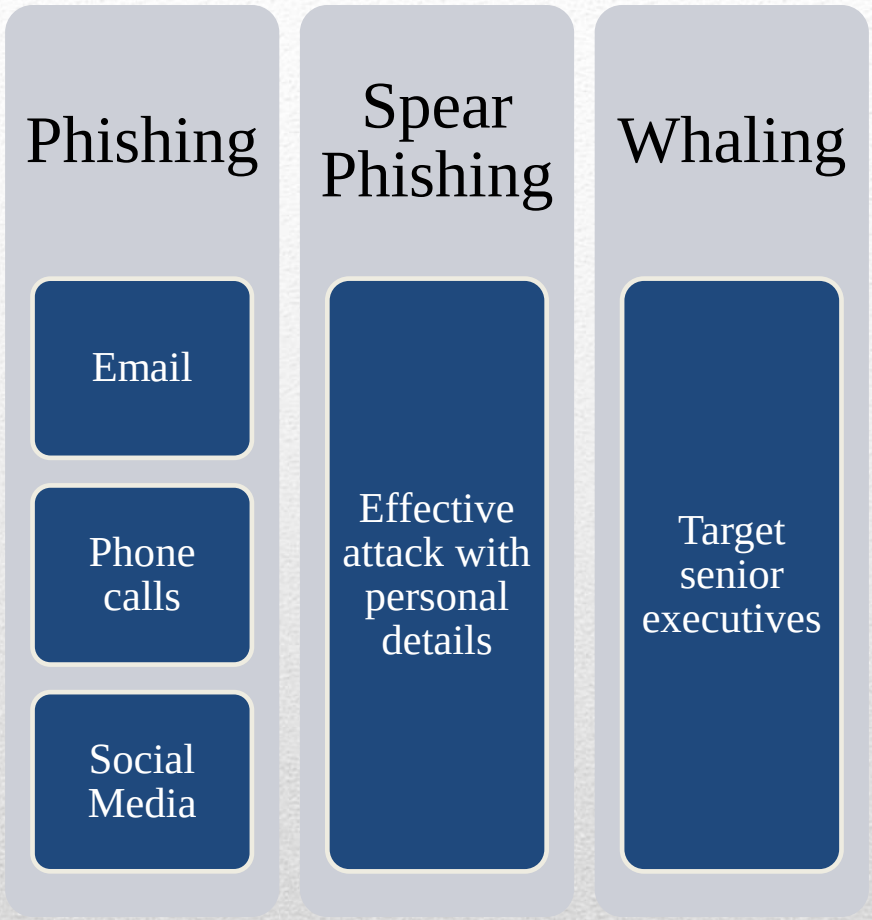


SOFT TARGETS



NOW TRENDING : HACKING

NOW TRENDING : CREDIT CARDS



Obtain sensitive information

Bait offered to victim

Social engineering techniques

NOW TRENDING : PHISHING

Spoofing

- Caller ID
- IP Address
- Website
- Emails

Pharming

Redirect to fake site where user enters details

Conceal real source of phone/ VoIP call, email

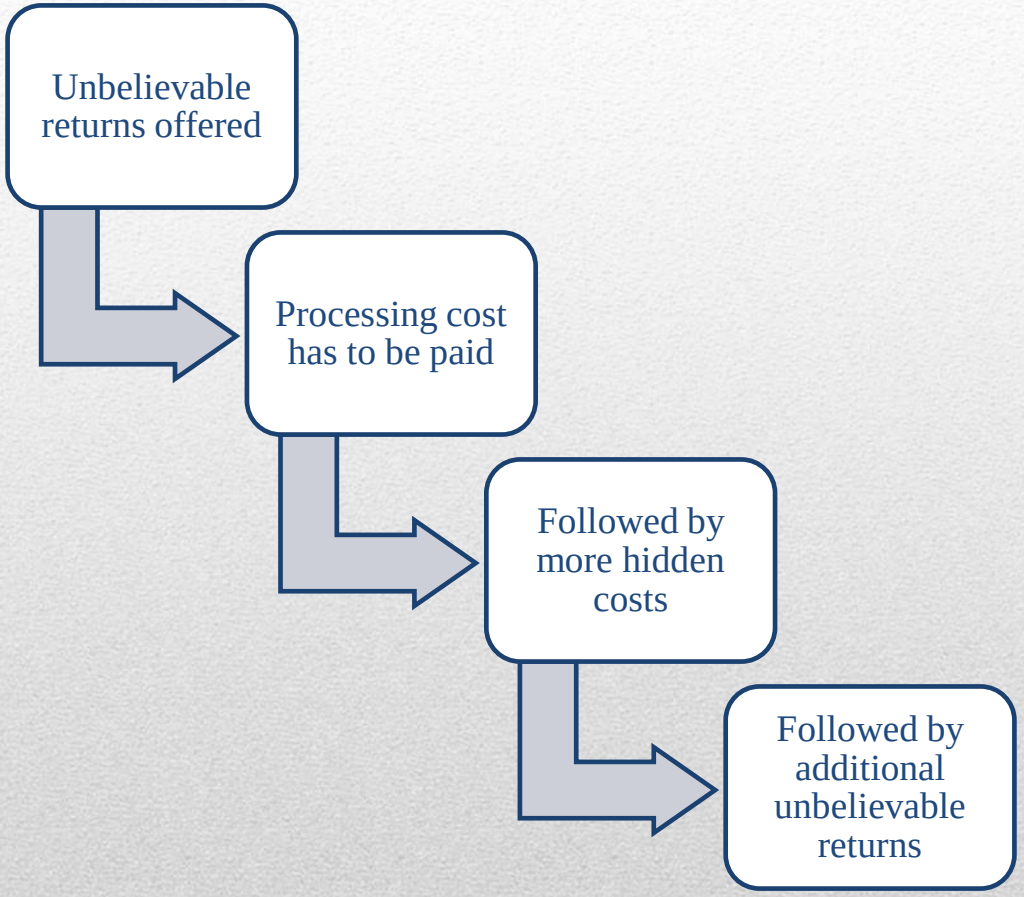
Send packet data with false source IP address

Same design + similar URL website

NOW TRENDING : SPOOFING

Honey Trap

- Advance fee for processing lottery etc.
- Dating
- Charity
- Ponzy/ Pyramid Schemes
- Online auction/ retail
- Money transfer fraud
- Internet marketing of rare items



NOW TRENDING : HONEY TRAP

Call Tag Scam

- Credit card fraud
- Online purchase
- Track shipment
- Call card holder, ask for permission to pick item quoting mistaken shipment

Transaction Account Scam

- Email hack – information of clients
- Spoof mail to merchant from “client”, request payment in “new” account
- Launder money in various international accounts

Bank A/C Compromise

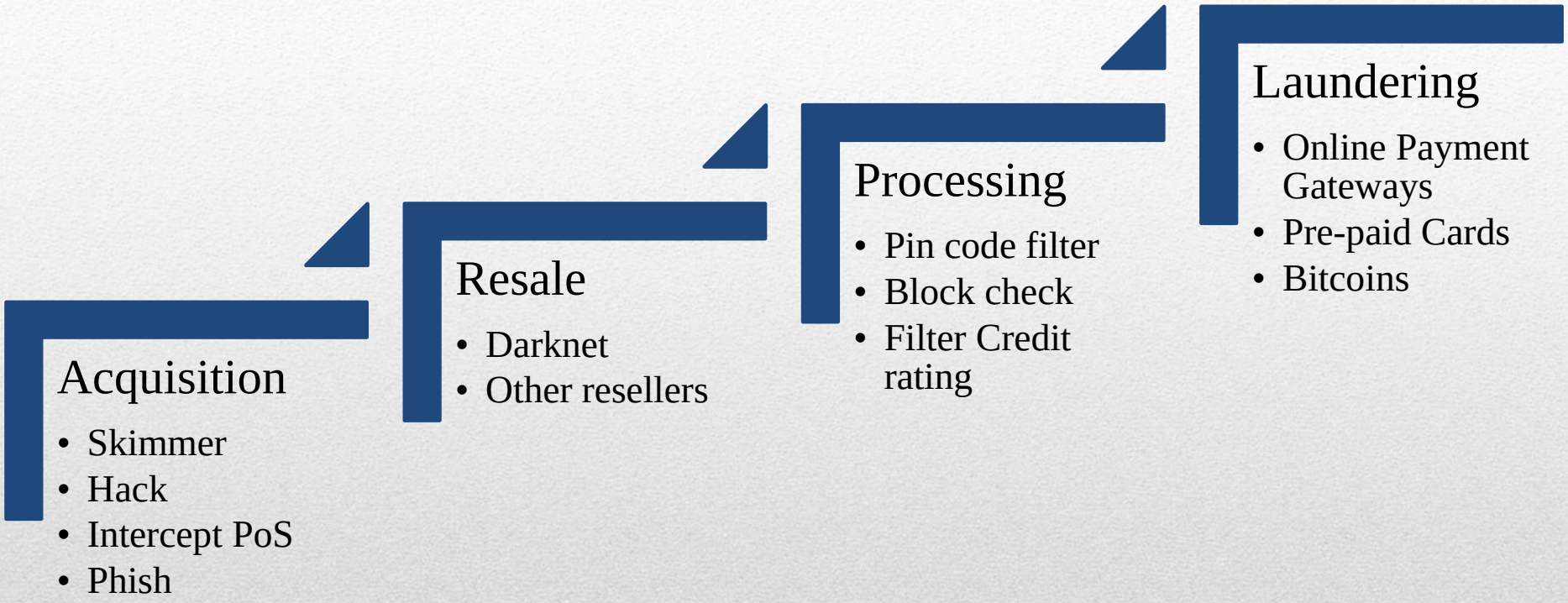
- Credit Card fraud
- Change message alert mobile number or Get duplicate SIM issued quoting loss of SIM
- Quick ATM withdrawals, online purchase or launder money

Stock Market Manipulation

- Spam email/ chat/ internet boards
- Pump & Dump or Scalping
- Sell/ buy quickly and launder money

COCKTAILS

EVOLVING MODUS OPERANDI



Dark Web	Part of www on dark-nets which uses public internet but requires specific software, configuration and authorization access
Dark Net	Peer-to-peer or Private overlay networks, popular for illegal online trade involving drugs, weapons, fake currency
TOR	*The Onion Router* directs traffic through free, worldwide, volunteer network of over 7000 relays
Crypto-Currency	Bitcoin, Monero etc. are tradable digital assets for peer-to-peer transactions, esp. on the Dark Net further hardened by tumblers

CHALLENGES

FUTURE

- More Browser and Web-Based Infection Exploits
- More Sophisticated Social Engineering
- More Ransomware
- BYOD Vulnerabilities
- New Attack Vectors in the Internet of Things

INFORMATION TECHNOLOGY ACT 2000 (Amended in 2008)

- Offences Defined
  - Tampering of Source Code
  - Damage to computer system
  - Hacking
  - Data theft/ stolen password/ identity/ impersonation
  - Pornography
  - Access of Protected Systems
- Digital evidence is admissible
- Inspector & above can investigate
- Power to search public places - Cyber cafes
- CCA can order interception/ decryption
- Cases will be tried by normal courts

Sl. No	Nature of complaint	Applicable section(s) and punishments under ITAA 2008	Applicable section(s) under other laws and punishment
1	Mobile phone lost/stolen		Section 379 IPC upto 3 years imprisonment or fine or both
2	Receiving stolen computer/ mobile phone/ data (data or computer or mobile phone owned by you is found in the hands of someone else.)	Section 66 B of ITAA 2008 - upto 3 years imprisonment or Rupees one lakh fine or both	Section 411 IPC - upto 3 years imprisonment or fine or both
3	Data owned by you or your company in any form is stolen	Section 66 of ITAA 2008 - upto 3 years imprisonment or fine up to rupees five lakh or both	Section 379 IPC - upto 3 years imprisonment or fine or both
4	A password is stolen and used by someone else for fraudulent purpose.	Section 66C of ITAA 2008- upto 3 years imprisonment and fine up to Rupees one lakh Section 66D ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section 419 IPC - upto 3 years imprisonment or fine Section 420 IPC - upto 7 years imprisonment and fine
5	An e-mail is read by someone else by fraudulently making use of password	Section 66 of ITAA 2008 - upto 3 years imprisonment or fine upto Rupees five lakh or both Section 66C of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	
6	A biometric thumb impression is misused	Section 66C of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	
7	An electronic signature or digital signature is misused	Section 66C of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	
8	A Phishing e-mail is sent out in your name, asking for login credentials	Section 66D of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section 419 IPC - upto 3 years imprisonment or fine or both

Sl. No	Nature of complaint	Applicable section(s) and punishments under ITAA 2008	Applicable section(s) under other laws and punishment
9	Capturing, publishing, or transmitting the image of the private area without any person's consent or knowledge	Section 66E of ITAA 2008- upto 3 years imprisonment or fine not exceeding Rupees two lakh or both	Section 292 IPC - upto 2 years imprisonment and fine Rupees 2000 and upto 5 years and rupees 5000 for second and subsequent conviction
10	Tampering with computer source Documents	Section 65 of ITAA 2008- upto 3 years imprisonment or fine upto Rupees two lakh or both Section 66 of ITAA 2008 - upto 3 years imprisonment or fine upto Rupees five lakh or both	
11	Data Modification	Section 66 of ITAA 2008 - upto 3 years imprisonment or fine up to Rupees five lakh or both	

Sl. No	Nature of complaint	Applicable section(s) and punishments under ITAA 2008	Applicable section(s) under other laws and punishment
12	Sending offensive messages through communication service, etc.	Section 66A of ITAA 2008 - upto 3 years imprisonment and fine	Section 500 IPC – upto 2 years or fine or both Section 504 IPC – upto 2 years or fine or both Section 506 IPC – upto 2 years or fine or both – if threat be to cause death or grievous hurt, etc. – upto 7 years or fine or both Section 507 IPC – upto 2 years along with punishment under section 506 IPC Section 508 IPC – upto 1 year or fine or both Section 509 IPC – upto 1 years or fine or both of IPC as applicable
13	Publishing or transmitting obscene material in electronic form	Section 67 of ITAA 2008 first conviction - upto 3 years and 5 lakh Second or subsequent conviction - upto 5 years and up to 10 lakh	Section 292 IPC - upto 2 years imprisonment and fine Rupees 2000 and upto 5 years and rupees 5000 for second and subsequent conviction
14	Publishing or transmitting of material containing sexually explicit act, etc., in electronic form	Section 67A of ITAA 2008 first conviction - upto 5 years and up to 10 lakh Second or subsequent conviction - upto 7 years and up to 10 lakh	Section 292 IPC - upto 2 years imprisonment and fine Rupees 2000 and upto 5 years and rupees 5000 for second and subsequent conviction
15	Punishment for publishing or transmitting of material depicting children in sexually explicit act, etc., in electronic form	Section 67B of ITAA 2008 first conviction - upto 5 years and up to 10 lakh Second or subsequent conviction - upto 7 years and up to 10 lakh	Section 292 IP - upto 2 years imprisonment and fine Rupees 2000 and upto 5 years and rupees 5000 for second and subsequent conviction

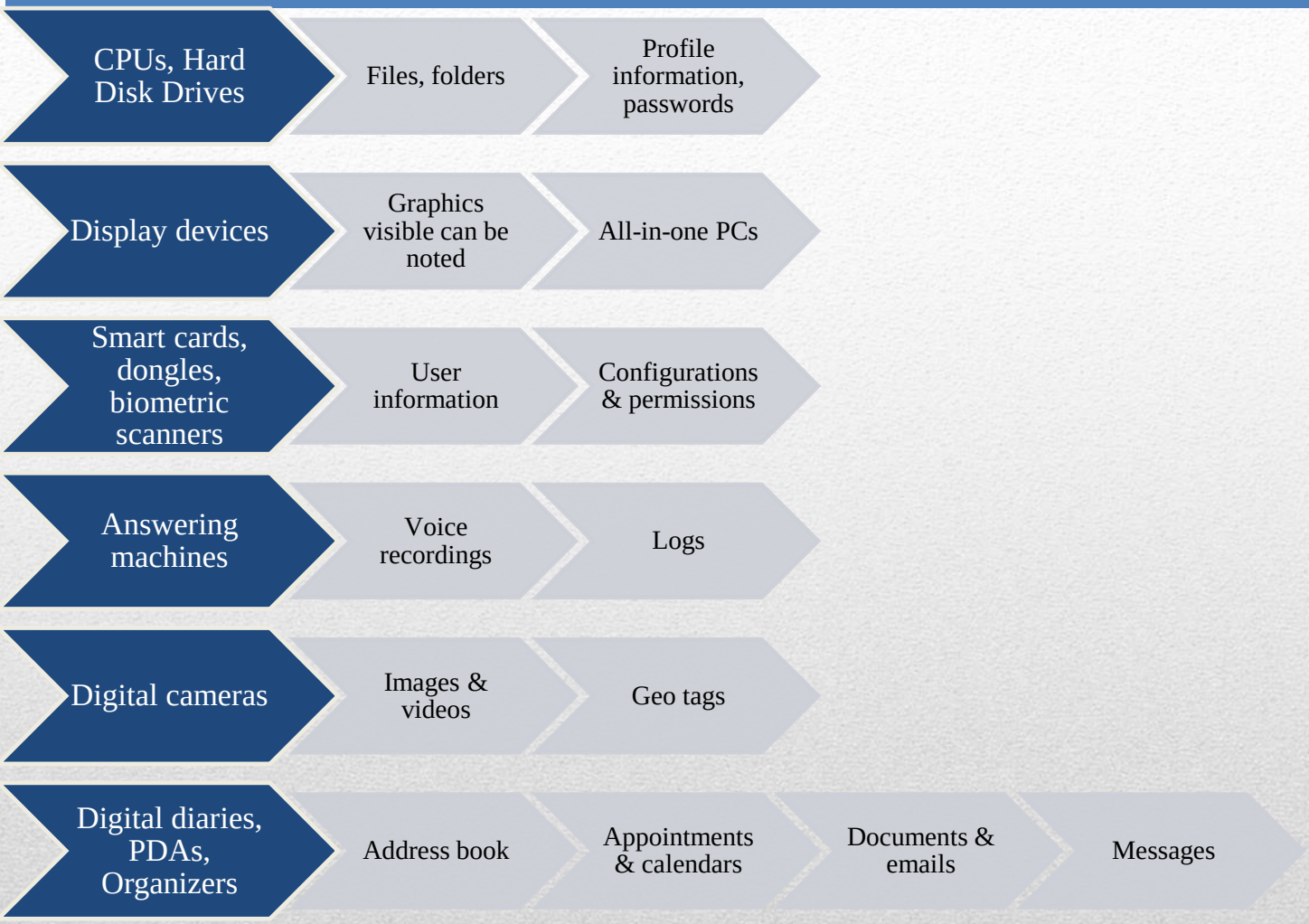
Sl. No	Nature of complaint	Applicable section(s) and punishments under ITAA 2008	Applicable section(s) under other laws and punishment
16	Misusing a Wi-Fi connection if done, against the state	Section 66 - upto 3 years imprisonment or fine up to Rupees five lakh or both Section 66F- life imprisonment of ITAA 2008	
17	Planting a computer virus if done, against the state	Section 66 - upto 3 years imprisonment or fine up to Rupees five lakh or both 66F- life imprisonment	
18	Conducting a denial of service attack against a government computer	Section 66 of ITAA 2008 - upto 3 years imprisonment or fine up to Rupees five lakh or both Section 66F of ITAA 2008- life imprisonment	

Sl. No	Nature of complaint	Applicable section(s) and punishments under ITAA 2008	Applicable section(s) under other laws and punishment
19	Stealing data from a government computer that has significance from national security perspective	Section 66 of ITAA 2008 - upto 3 years imprisonment or fine upto Rupees five lakh or both, 66F - life imprisonment	
20	Not allowing the authorities to decrypt all communication that passes through computer or network	Section 69 of ITAA 2008 - imprisonment upto 7 years and fine	
21	Intermediaries not providing access to information stored on their computer to the relevant authorities	Section 69 of ITAA 2008 - imprisonment upto 7 years and fine	
22	Failure to Block Web sites, when ordered	Section 69A of ITAA 2008 - imprisonment upto 7 years and fine	
23	Sending threatening messages by e- mail	Section 66A of ITAA 2008 - upto 3 years imprisonment and fine	Section 504 - upto 2 years or fine or both
24	Word, gesture or act intended to insult the modesty of a woman		Section 509 IPC - upto 1 year or fine or both - IPC as applicable
25	Sending defamatory messages by e- mail	Section 66A of ITAA 2008 upto 3 years imprisonment and fine	Section 500 IPC - upto 2 years or fine or both
26	Bogus Web sites, cyber frauds	Section 66D of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section 419 - upto 3 years imprisonment or fine Section 420 IPC - upto 7 years imprisonment and fine
27	E-mail Spoofing	Section 66C of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section 465 IPC – upto 2 years or fine or both Section 468 IPC – upto 7 years imprisonment and fine

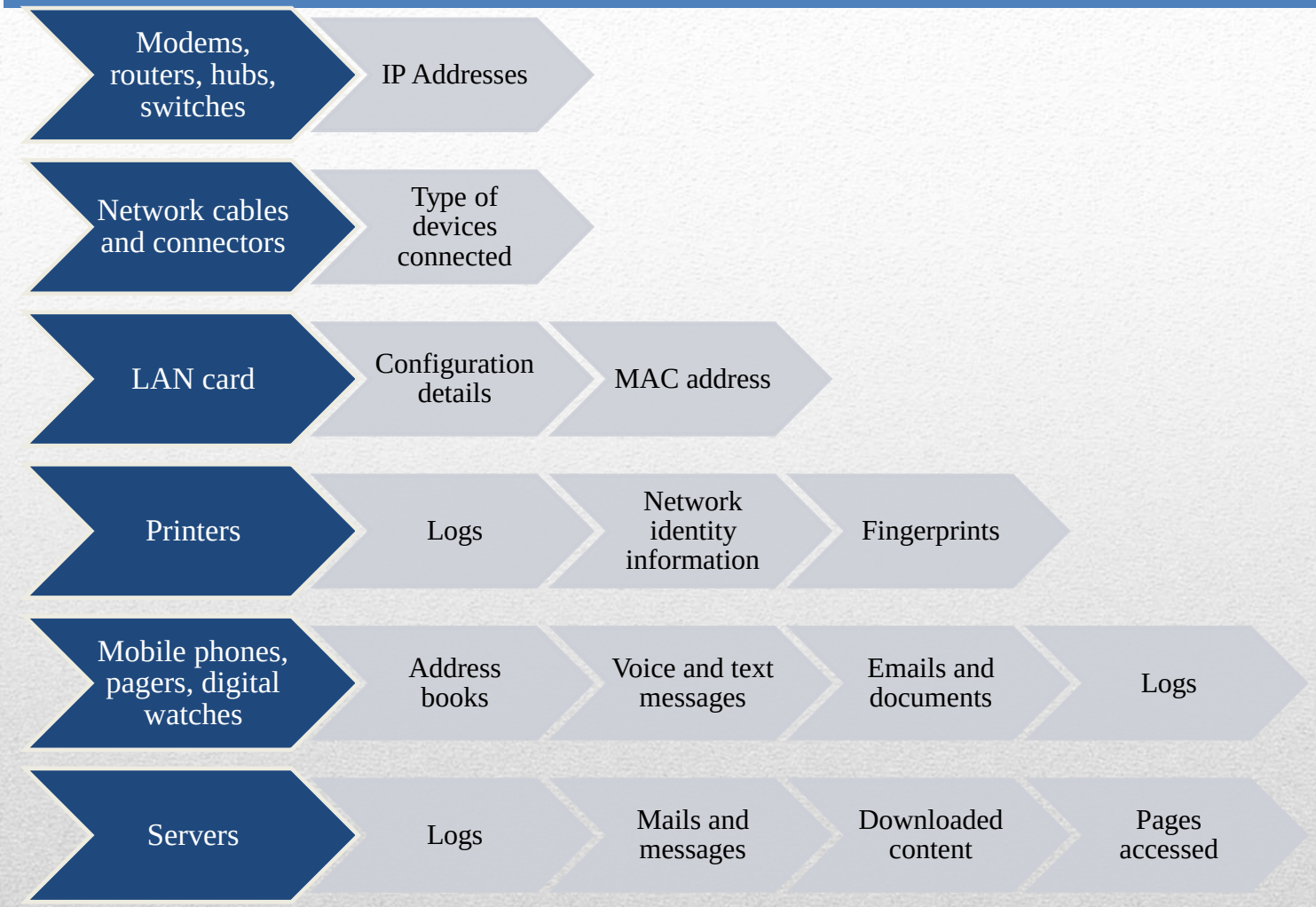
Sl. No	Nature of complaint	Applicable section(s) and punishments under ITAA 2008	Applicable section(s) under other laws and punishment
28	Making a false document	Section 66D of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section 465 IPC - upto 2 years or fine or both
29	Forgery for purpose of cheating	Section 66D of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section 468 IPC - upto 7 years imprisonment and fine
30	Forgery for purpose of harming reputation	Section 66D of ITAA 2008 - upto 3 years imprisonment and fine up to Rupees one lakh	Section. 469 IPC - upto 3 years and fine
31	E-mail Abuse	Section 66A of ITAA 2008 - upto 3 years imprisonment and fine	Sec. 500 IPC - upto 2 years or fine or both
32	Punishment for criminal intimidation	Section 66A of ITAA 2008 - upto 3 years imprisonment and fine	Sec. 506 IPC - upto 2 years or fine or both - if threat be to cause death or grievous hurt. etc. - upto 7 years or fine or both
33	Criminal intimidation by an anonymous communication	Section 66A of ITAA 2008 - upto 3 years imprisonment and fine	Sec. 507 IPC - upto 2 years along with punishment under section 506 IPC
34	Copyright infringement	Section 66 of ITAA 2008 - upto 3 years imprisonment or fine up to Rupees five lakh or both	Sec. 63, 63B Copyrights Act 1957
35	Theft of Computer Hardware		Sec. 379 IPC upto 3 years imprisonment or fine or both
36	Online Sale of Drugs		NDPS Act
37	Online Sale of Arms		Arms Act

OTHER USEFUL PROVISIONS

- Sec. 65 A & B, IEA: Admissibility of digital evidence
  - Sec. 5: Evidence only for relevant facts
  - Sec. 136: Judge to decide admissibility
- Sec. 165 CrPC: Search by a police officer
- Sec. 100 CrPC: Persons I/C of closed place to allow search
- Sec. 80 ITAA: Power of police officer to enter, search and arrest without warrant
- Sec. 84-B ITAA: Punishment for abetment
- Sec. 84-C ITAA: Punishment for attempt



SOURCES OF DIGITAL EVIDENCE



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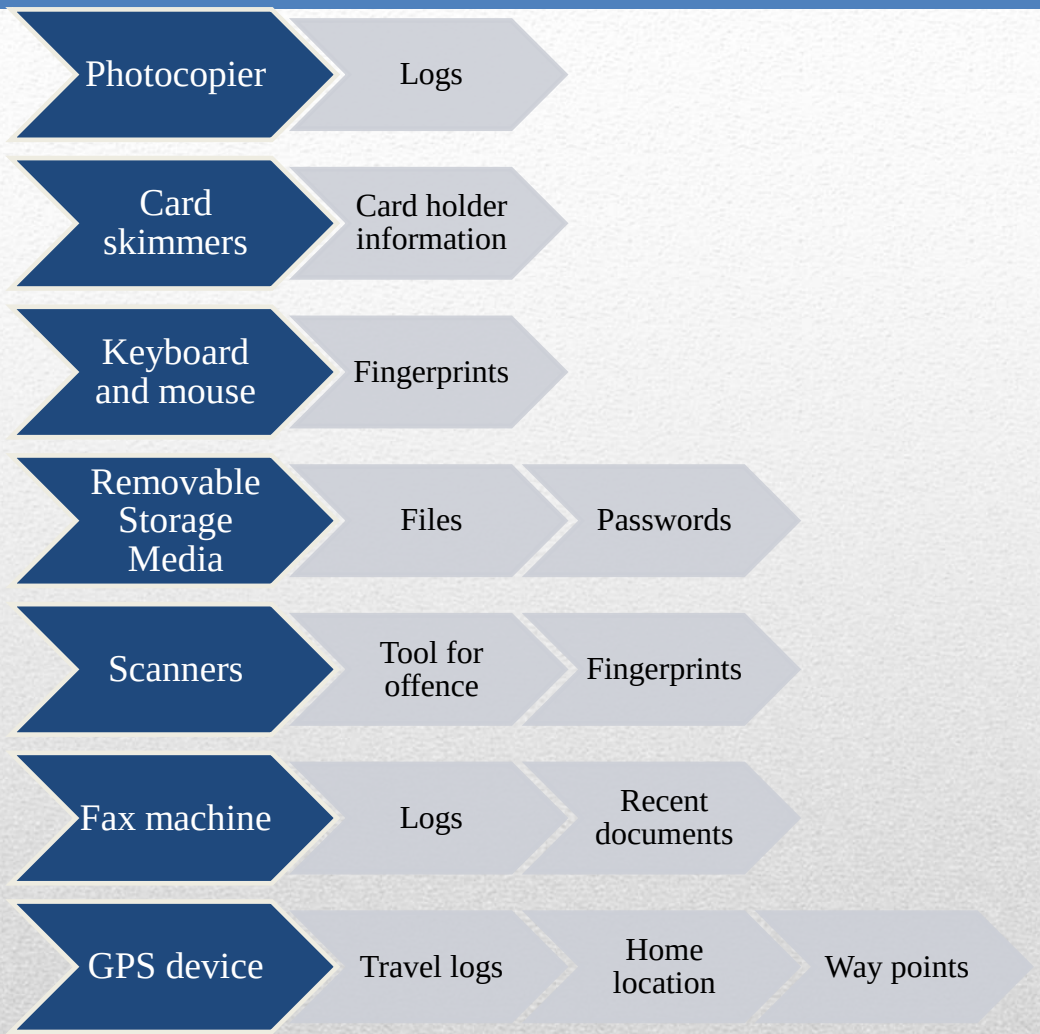


SOURCES OF DIGITAL EVIDENCE

Cyber Café or Office

- Number of computers – present; connected to internet
- Network topology and architecture
- CCTV camera recordings
- User management software?
- Log register
- Policy for formatting of storage devices
- Policy for removable media storage
- Recent hardware replacements

Home

- Type of connection
- Number of computers
- Location of systems with details of persons accessing them
- Removable storage media
- Network topology
- Peripherals – printer, scanner, modem

SCENE OF CRIME

INVESTIGATION

QUESTIONS OF INTEREST

- What is the nature of incident?
- Who discovered? How? When?
- What is the loss?
- What is the access level? Physical security? People in/ around?
- What are the applications/ software/ database used?
- Who are the developers of the applications?
- Who provides support and maintenance?
- Where are the servers?
- Who is the administrator?
- What is the intrusion prevention/ detection system?
- Money Trail
- Likely negligence by victim

SEIZURE

Switched off machines

- Complete seizure
- Open and identify hard disk, disconnect and label
- Signature of accused/ witness

Switched on machines

- Record screen shot
- Record any movement – mouse, enter key
- Forensic tools to extract info in RAM etc.
- Last option – remove power cables from the machine end

General

- If device is off, do not turn it on
- If PDA/Mobile is on, do not turn it off, try to keep it charged
- Label all cables
- Seize all relevant devices
- Seize other relevant items like diaries, documents etc.
- Document all steps
- Record Time Zone/ System
- Photograph everything before you start
- Photograph every step, every seized item separately
- Technical resource (if possible), Witnesses (mandatory)
- Record events in correct chronology
- Keep digital media in anti-static covers

SEIZURE

POST SEIZURE

- Notify the court regarding details of seizure
- Obtain orders to retain the seized property for further investigation
- Obtain orders to make bit-stream image of seized media and forward for forensic analysis
- If accused approaches for release of seized material, ensure its opposition and if unavoidable, only provide a forensically imaged copy of seized evidence and never the original
- Ensure chain of custody and proper recording of all transactions

FORENSIC EXAMINATION

- Brief history of case
- Details of exhibits
- Date & time of seizure
- Condition of item (on/off) at the time of seizure
- Photographs/video, if taken
- Was the machine connected to any network
- Questionnaire

EMAILS

Full Header displays the entire journey of email

Successive ‘Message Transfer Agents’ put their stamps

Information

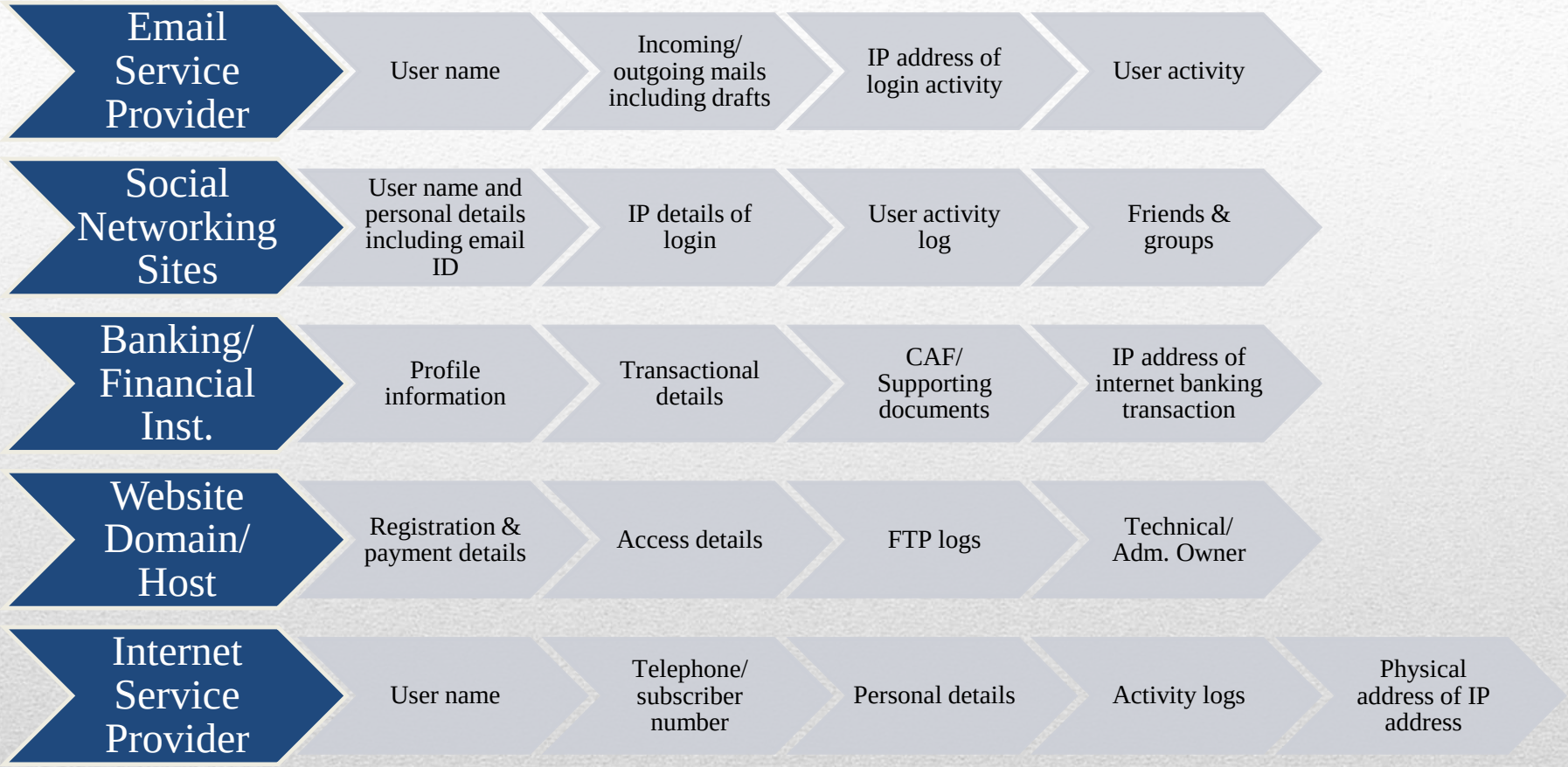
- Sender’s email ID – last from top, just above recipient
- Internet routing information – last from top, above sender’s ID
- Email server information – message ID
- Date, Time and Time Zone

Different email services have different ways to reveal full header

- Gmail masks source IP with its own private IP

Who Is Search – APNIC, ARIN, LACNIC, RIPE NCC

Physical address from ISP



SERVICE PROVIDERS

EVIDENCE IN COURT

USEFUL RESOURCES

THANKS