Iftach Ian Amit | August 2011

Data Exfiltration

Not just for Hollywood!

Iftach Ian Amit
VP Consulting

DC9723
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IL-CERT Visionary

whoami

- Not certified
- VP Consulting at Security-Art
- Hacker, researcher, developer
- I like crime, and war :-)
- DC9723, PTES, IL-CERT, IAF

Agenda

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I. Infiltration

- Technical factors
- Human factors
- Command & Control in loosely connected environments

Infiltration - Technical

- Exploits! of what???
  - Web, FTP, mail, SSL-VPN...
    - Will only get you the basic stuff
  - 3rd party tools used (LinkedIn, SalesForce, SaaS applications)...
    - Harder to get

      *although nice to have as reproducible on many targets

Infiltration - Technical

The problem:

Small attack surface

Infiltration - Technical

- How about them windows?
- Win XP still the dominantly deployed OS on clients (both in corporate and government settings)
- Win 7 is no big deal

- **Attack surface** is much broader (spell Adobe, Symantec, WinZip, AOL, Mozilla, etc...)

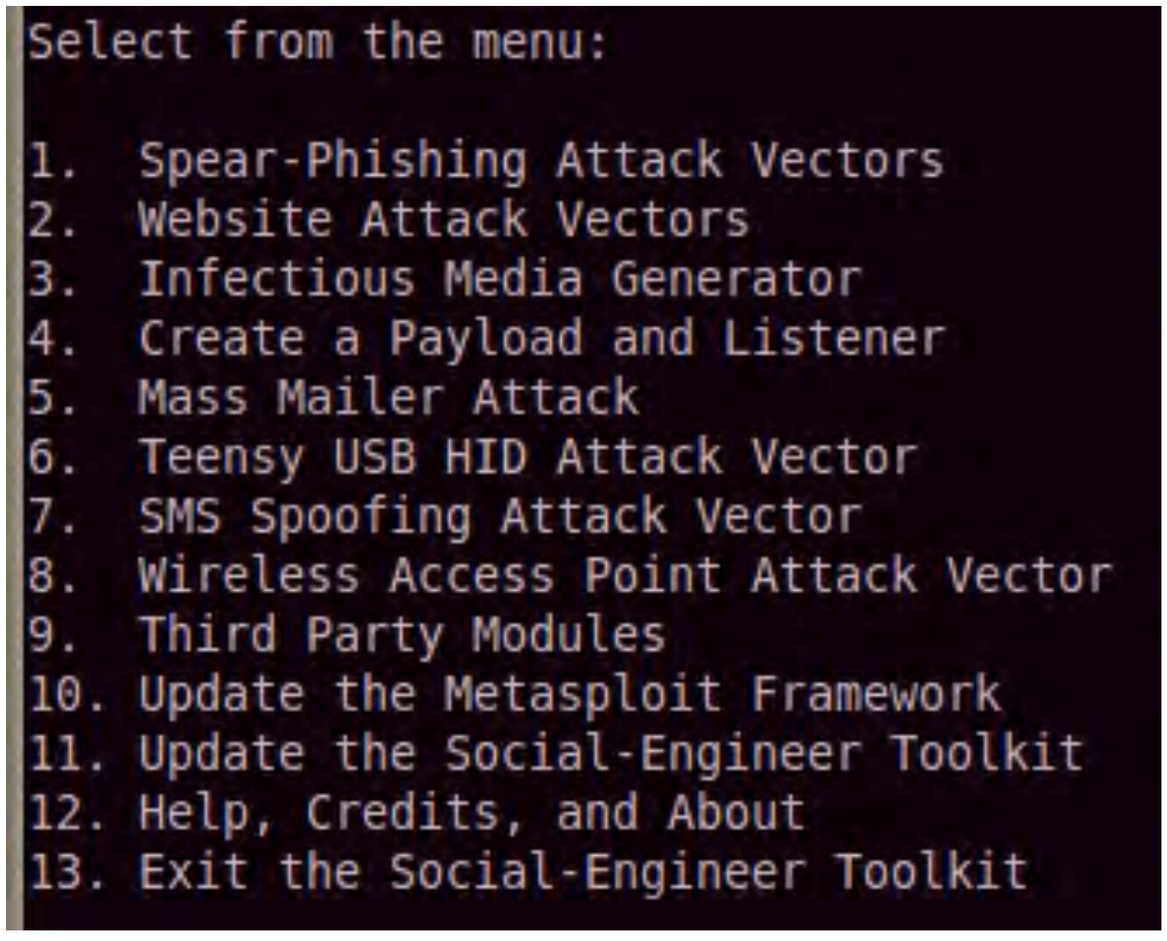
Infiltration - Human

- Not as in "I got your guy and I want $1,000,000 to set him free"
- More like "dude, check out the pics from the conference we went to last month. Wicked!"
  - "did you get my memo with the new price-list <link to .xls file>"
  - You get the idea...

Infiltration - Human

Infiltration - Human

- eMails, web links, phishing...
  - Works like a charm!
- And can be mostly automated
  - SET to the rescue



Infiltration - Human

And... being nice/nasty/ obnoxious/needy always helps!

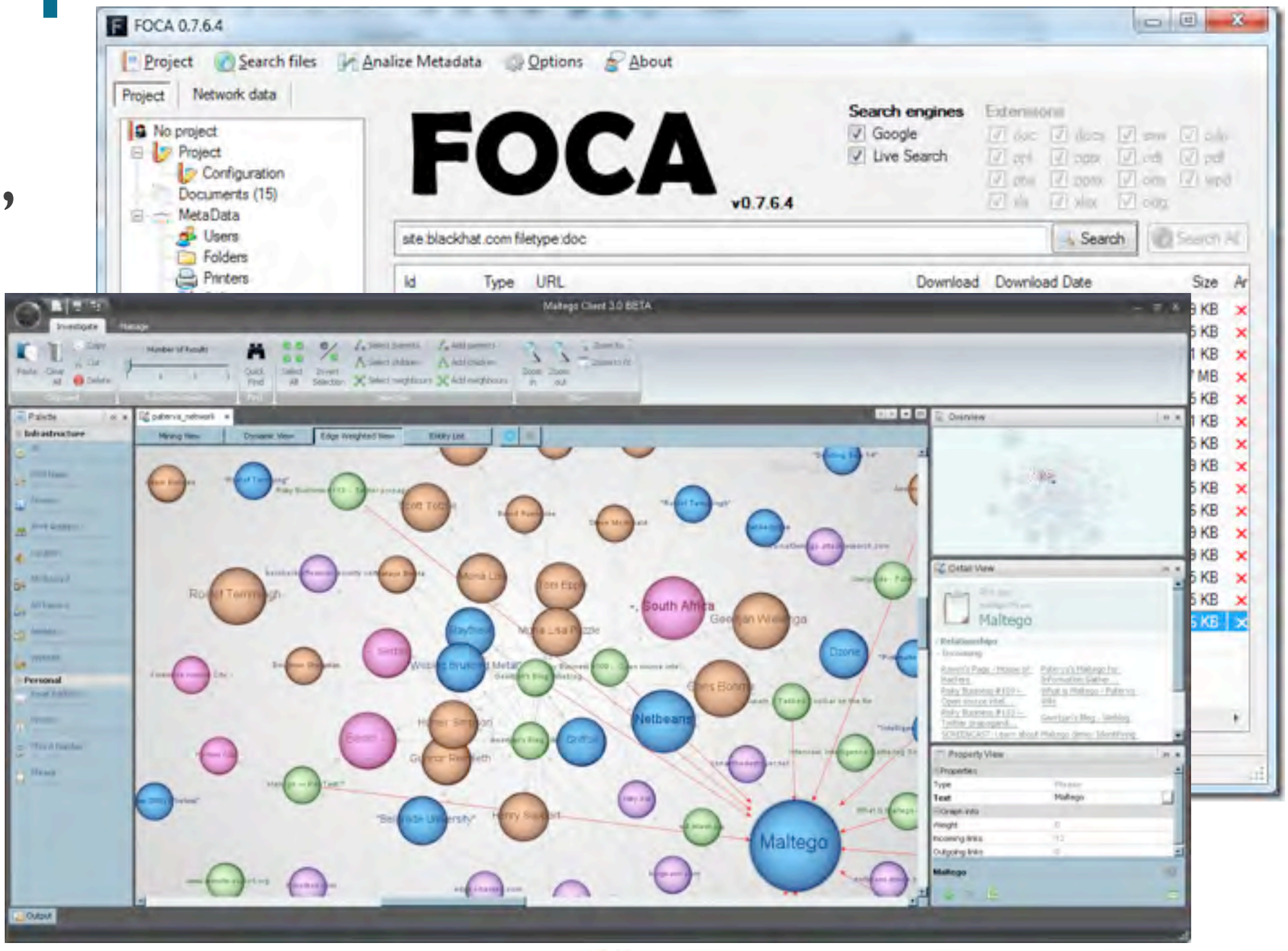
2. Data Targeting & Acquisition

- Weaponizing commercial tools
- Creating "APT" capabilities

- But first - targeting...

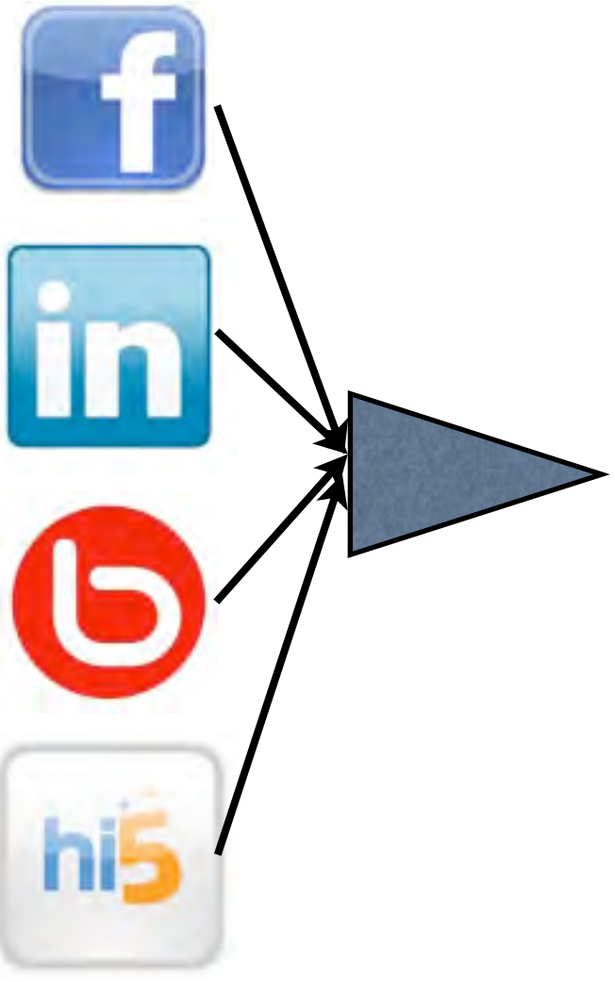
Step 1: Basic Intel

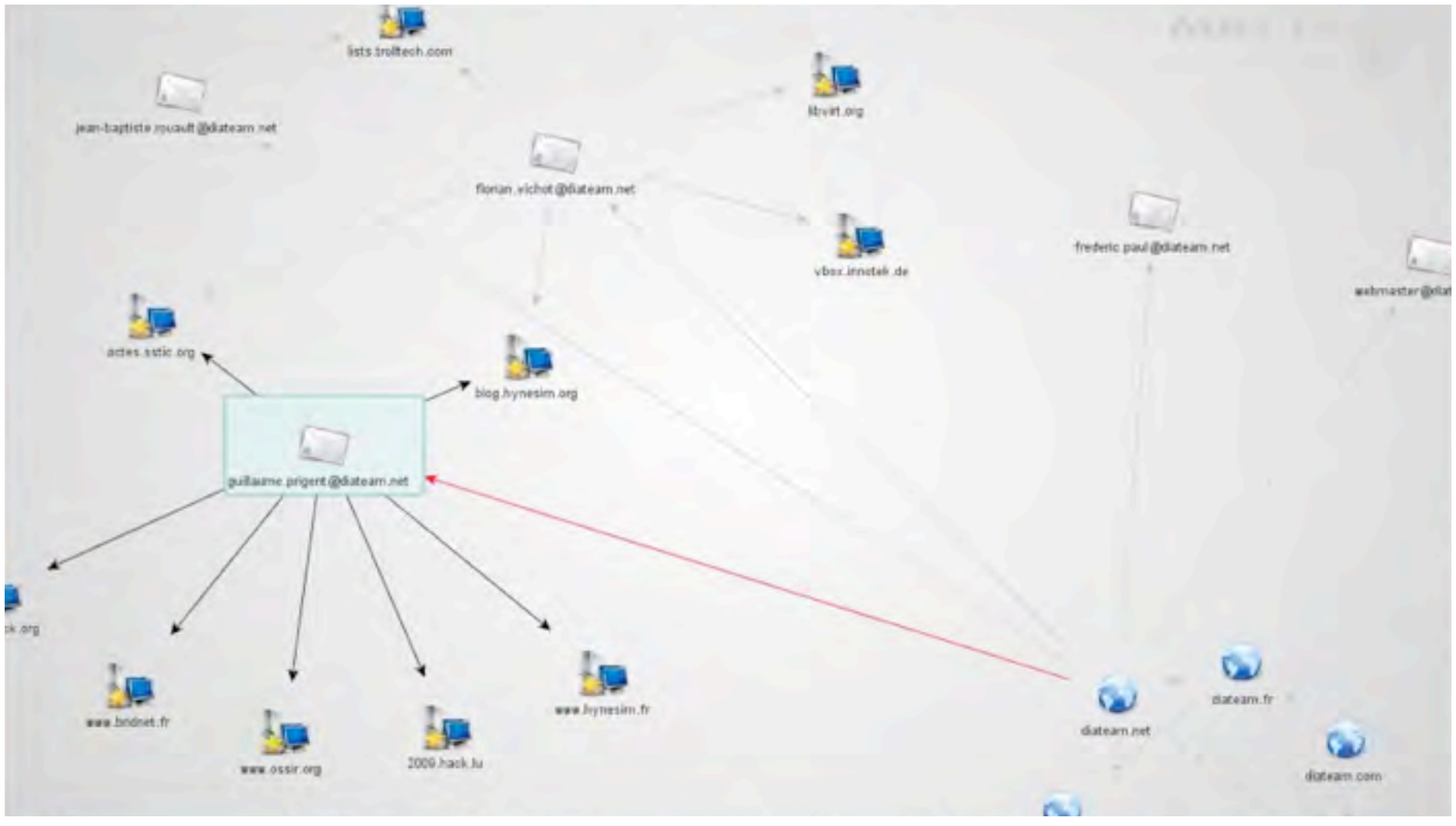
What is the target "willing" to tell about itself?



Who's your daddy?

And buddy, and friends, relatives, colleagues...



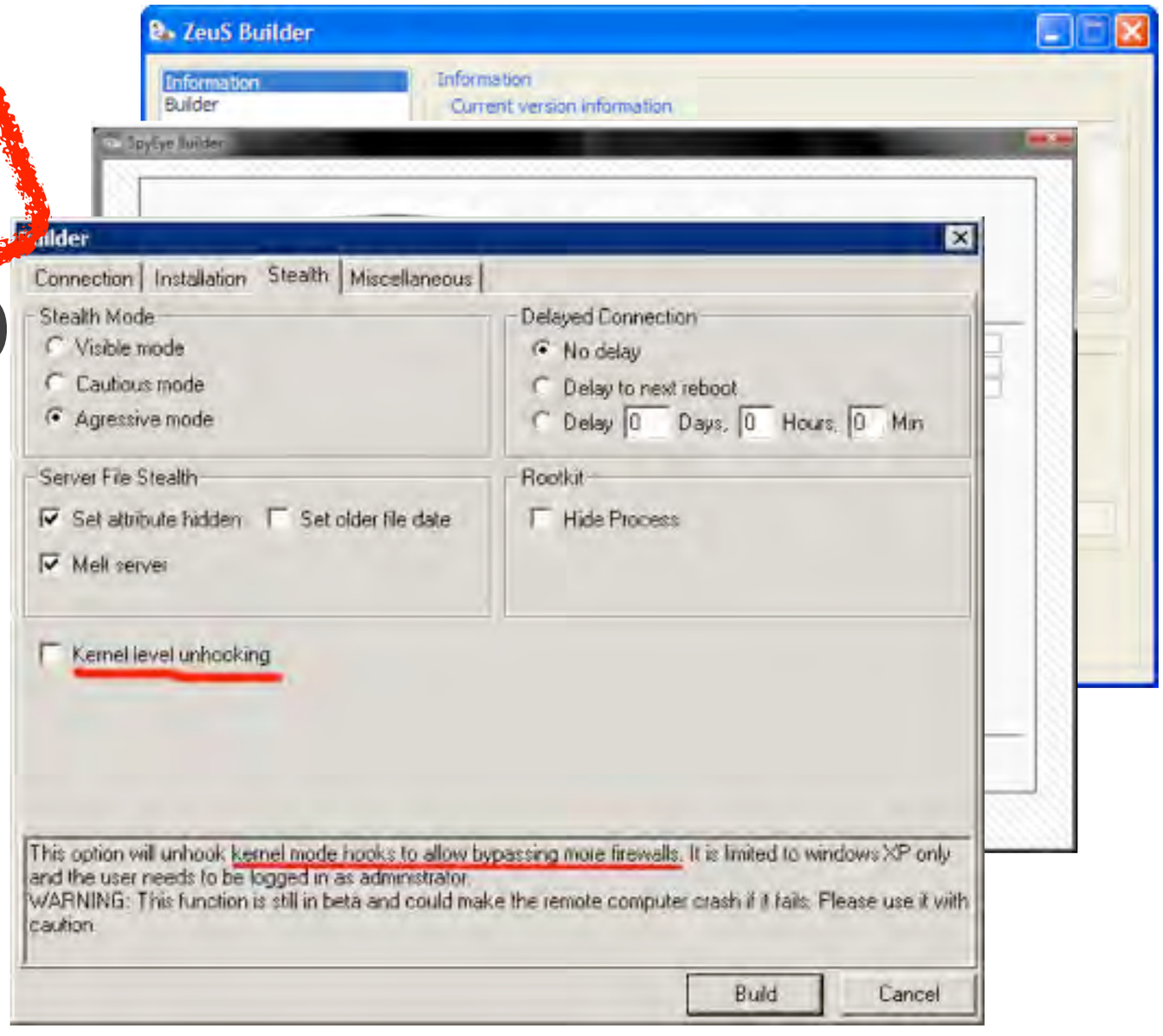


Select your target wisely

And then craft your payload :-)

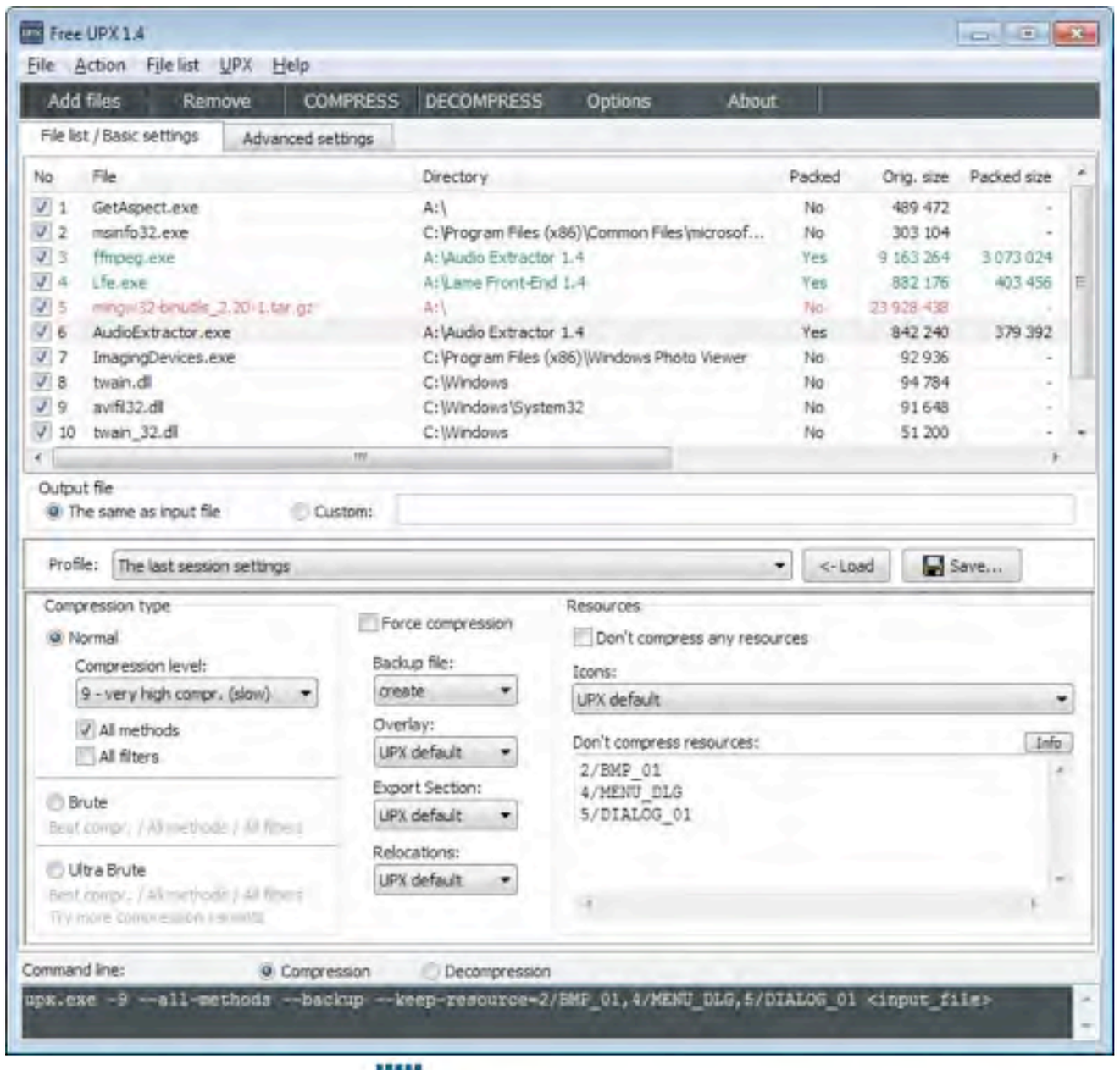
Not as expensive as you think

- ZeuS: ~~$3000-$5000~~ FREE!
- SpyEye: ~~$2500-$400~~ FREE!
- Limbo: ~~$500-$1500~~ FREE!



Just make sure to pack

Experienced travelers know the importance of packing properly



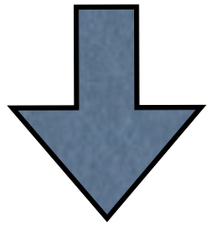
And set measurable goals

- File servers
- Databases
- File types
- Gateways (routes)
- Printers

From mass infection to APT

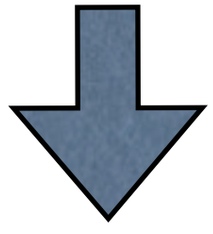
PATIENCE

Mass infection:
5-6 days before detection



Frequent updates

APT:
5-6 months before detection

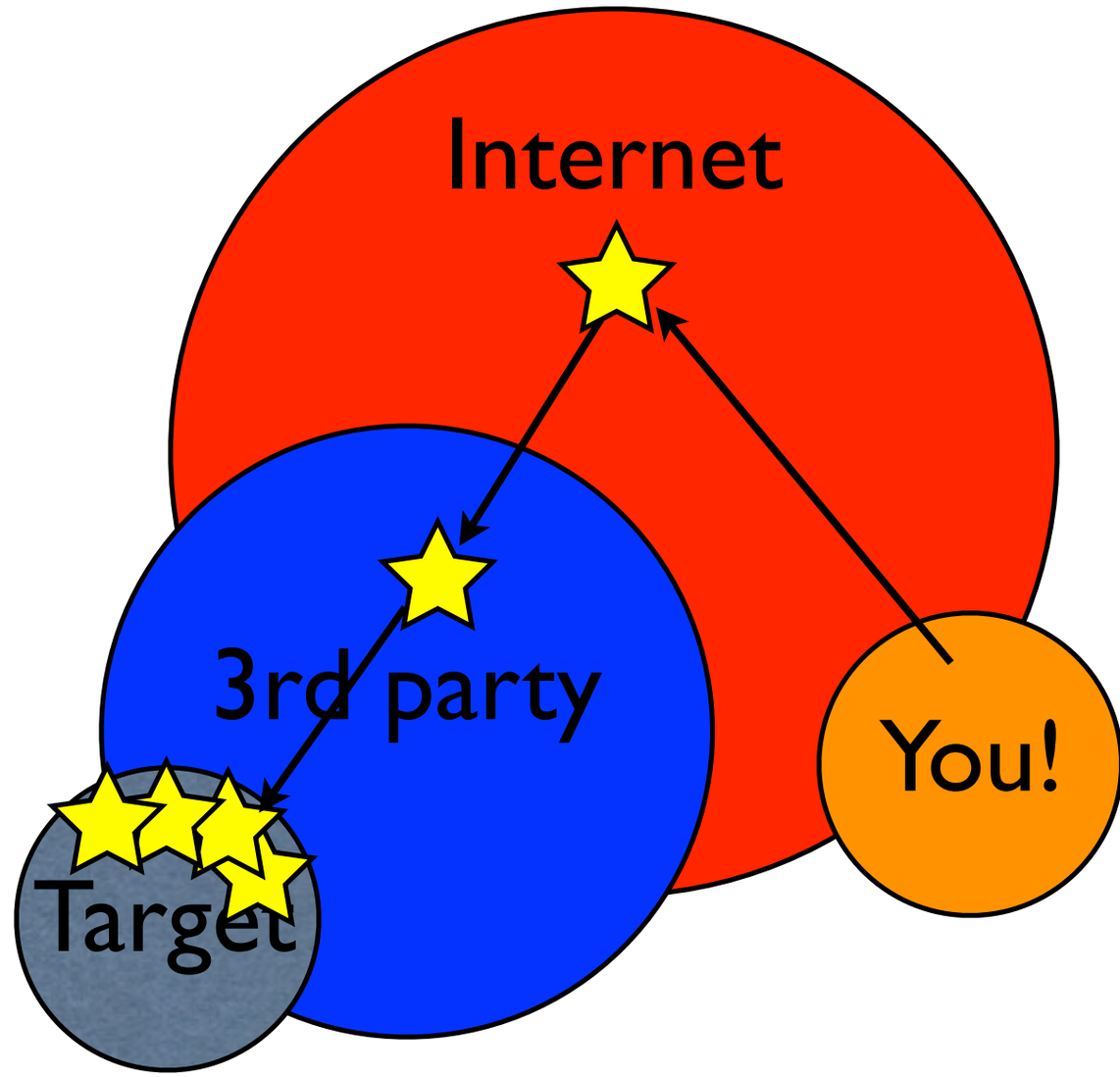


No* updates

* Almost

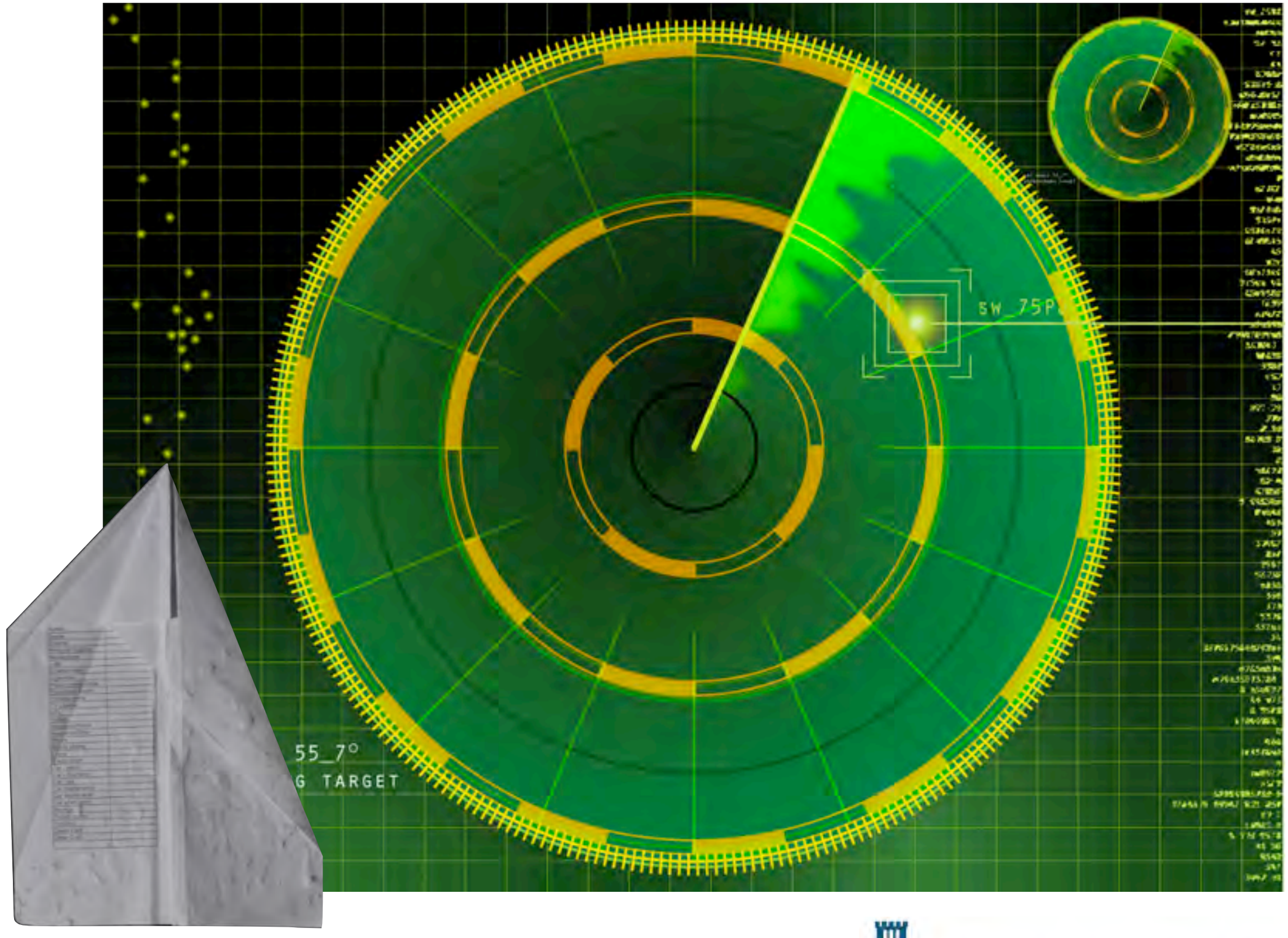
Control?

- What happens when you are so far behind?
- Just use your friends (peers)
  - Expect a one-way command scheme.
  - Exfiltration is a different animal...



3. Exfiltration

- Avoiding DLP
- Avoiding IPS/IDS egress filters
- Encryption
- Archiving
- Additional techniques



How about them SSLs?

- Cool.
- Although sometimes may be intercepted
  - Pesky content filters...

So...

-----BEGIN PGP MESSAGE-----
Version: GnuPG/MacGPG2 v2.0.14 (Darwin)

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uZekwXwYsqpei/f/sYo875p5NeX3g62zgjy2Vly+n58WaZWoHb5Y0QCxNfpjdcAQ
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6IznXaJu9jRWDj6tvSypx8X2iiVgtSHYahlqEUH1RusAMCILkx0DydCvUud/qRbT
YcnkVVgA8ojeDoVpp3AabRrSmgEAOwW6M0KvnSuMKniLIKe7koIqGjEuLAx7s5Kg
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0X1TVob7xDo/fkRROHv74dIh2Kxa0SH8iGdb4kI=
=jN3t
-----END PGP MESSAGE-----

Still "too detectable"

Still "too detectable"

hQMOA1jQIm6UkL4eEAv/W3r/eYLUmqRNi/Jegt72lK6qdBiBfkg9PZ5YKql9CUZp
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0X1TVob7xDo/fkRROHv74dIh2Kxa0SH8iGdb4kI=
=jN3t

Much better

- Throws in some additional encodings
- And an XOR for old time's sake

- And we are good to go...
  - 0% detection rate

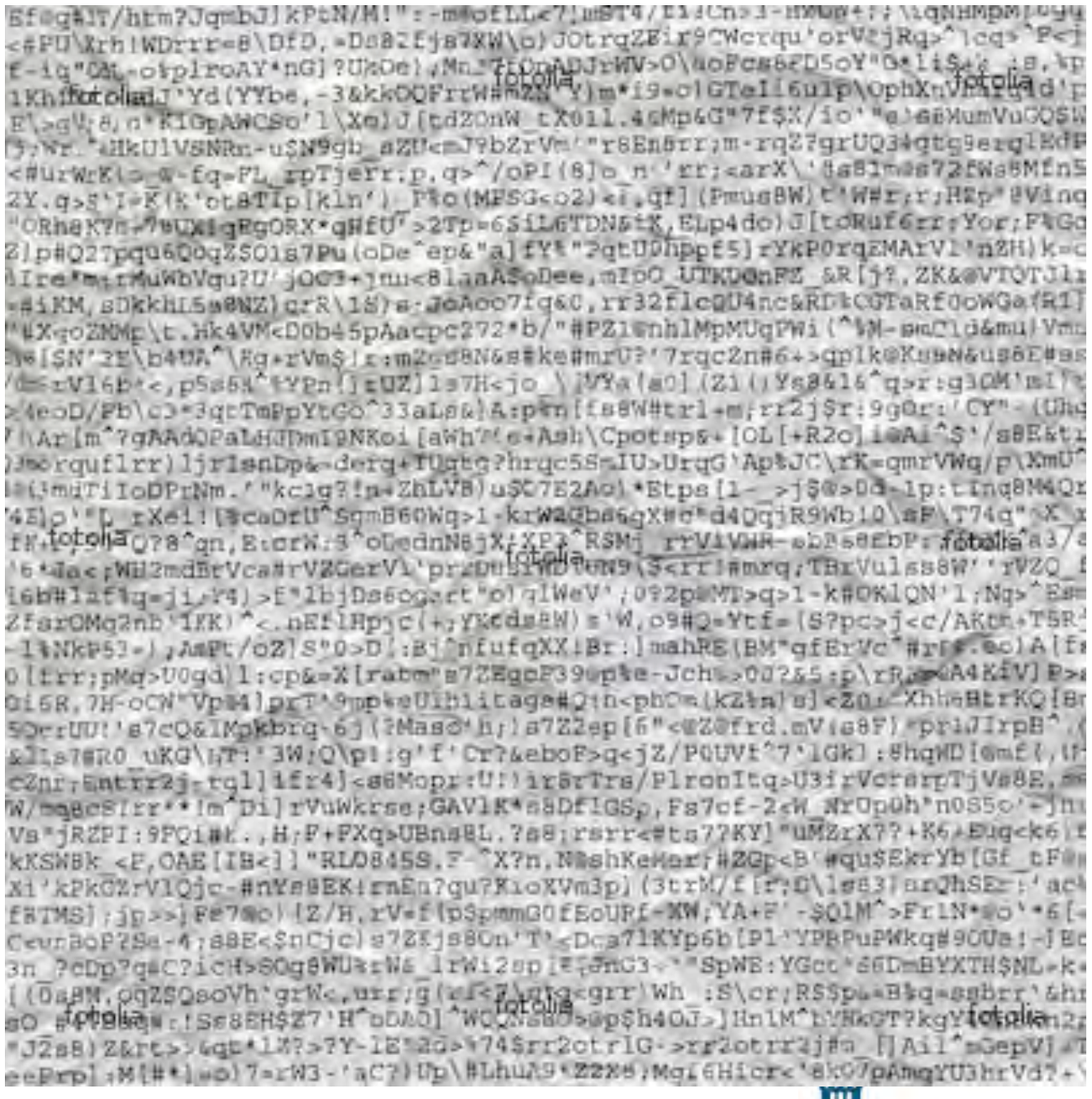
Resistance is futile

But you have no network

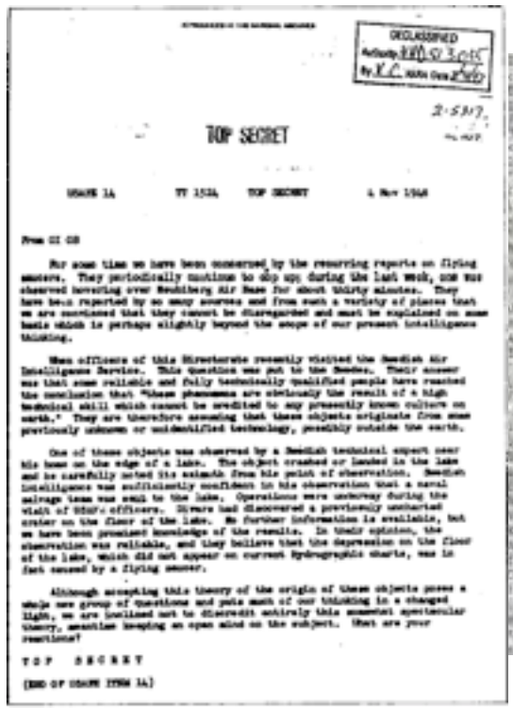
- They killed 80, 443, 53 and cut the cable to the interwebs!

- Go old-school!

Kill some trees



To shred or not to shred?



DECLASSIFIED

TOP SECRET

USAFE IA TT 1534 TOP SECRET 4 Nov 1968

From CC CB

For some time we have been concerned by the recurring reports on flying saucers. They periodically continue to pop up; during the last week, one was observed hovering over Hendsberg Air Base for about thirty minutes. They have been reported by so many sources and from such a variety of places that we are convinced that they cannot be disregarded and must be explained on some basis which is perhaps slightly beyond the scope of our present intelligence thinking.

When officers of this Directorate recently visited the Swedish Air Intelligence Service, this question was put to the Swedes. Their answer was that some reliable and fully testimonially qualified people have reached the conclusion that "these phenomena are obviously the result of a high technical skill which cannot be credited to any presently known culture on earth." They are therefore assuming that these objects originate from some previously unknown or unidentified technology, possibly outside the earth.

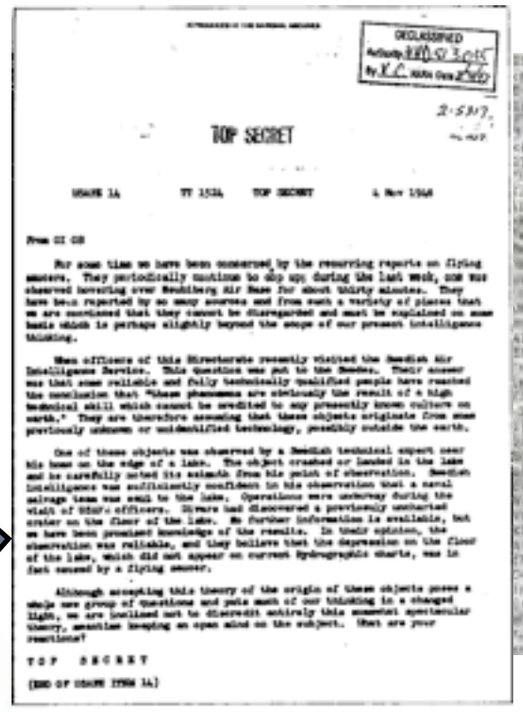
One of these objects was observed by a Swedish technical expert near his home on the edge of a lake. The object crashed or landed in the lake and he carefully noted its azimuth from his point of observation. Swedish intelligence was sufficiently confident in his observation that a naval salvage team was sent to the lake. Operations were underway during the visit of USAF officers. Divers had discovered a previously uncharted crater on the floor of the lake. No further information is available, but we have been promised knowledge of the results. In their opinion, the observation was reliable, and they believe that the depression on the floor of the lake, which did not appear on current hydrographic charts, was in fact caused by a flying saucer.

Although accepting this theory of the origin of these objects poses a whole new group of questions and puts much of our thinking in a changed light, we are inclined not to discredit entirely this somewhat spectacular theory, meantime keeping an open mind on the subject. What are your reactions?

TOP SECRET

(END OF USAFE 1534 IA)

To shred or not to shred?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TOP SECRET

(END OF USAFE 17986 IA)

Yeah, good ol'e DD...

Back to hi-tech (?)

ET Phone Home

Got VOIP? Excellent!

Target a handset/switch

↓

Set up a public PBX
OR a conference call
OR a voicemail box

→ Collect your data

↓

Encode

↓

Call, leave a message, don't expect to be called back...

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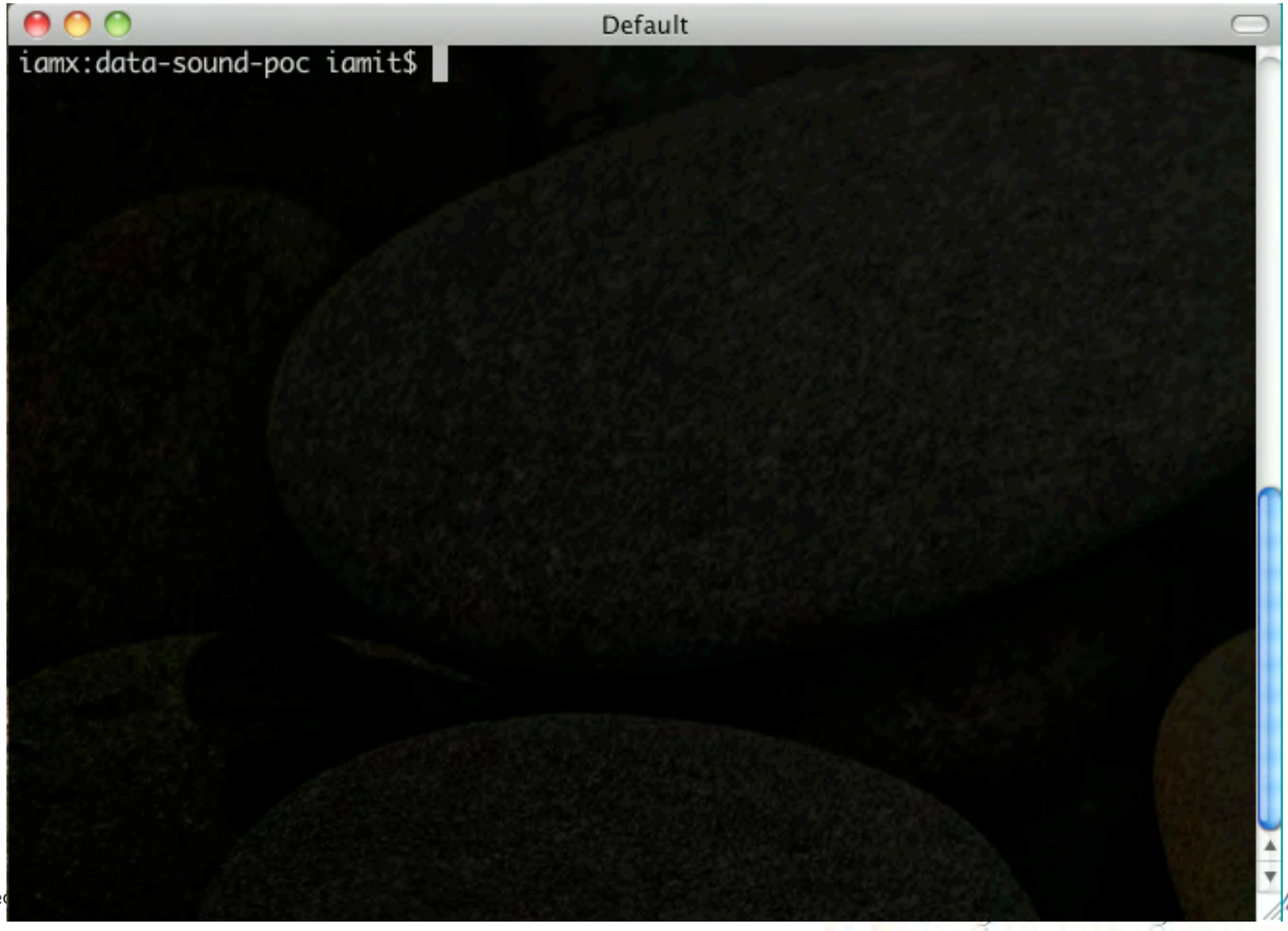
Voice exfiltration demo

Voice exfiltration demo



Voice exfiltration demo

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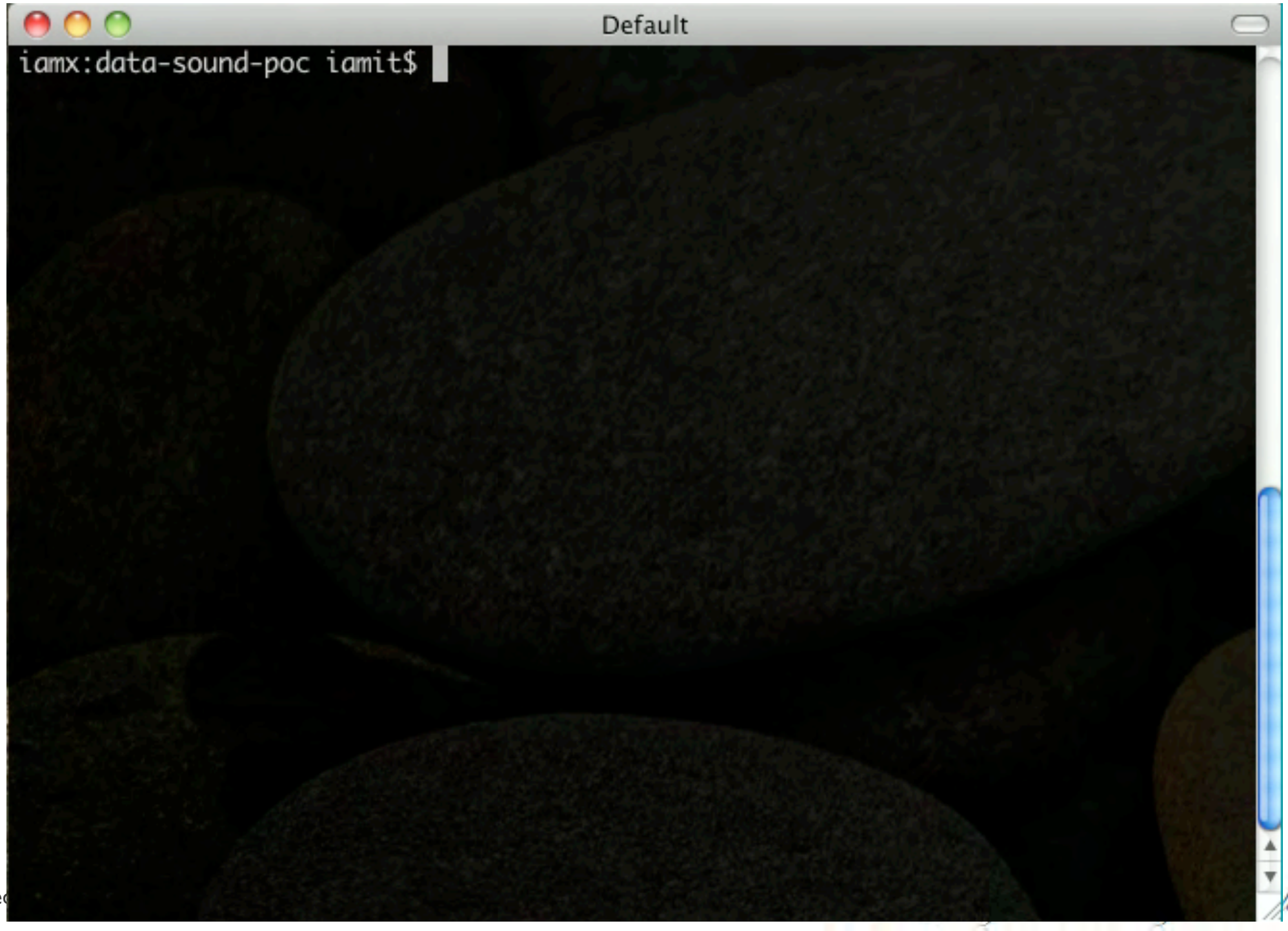


Killing paper isn't nice

- Fax it!
- Most corporations have email-to-fax services
  - heard of the address 555-7963@fax.corp.com ?
- Just send any document (text, doc, pdf) to it and off you go with the data...

Conclusions

- Available controls
- Information flow path mapping
- Asset mapping and monitoring

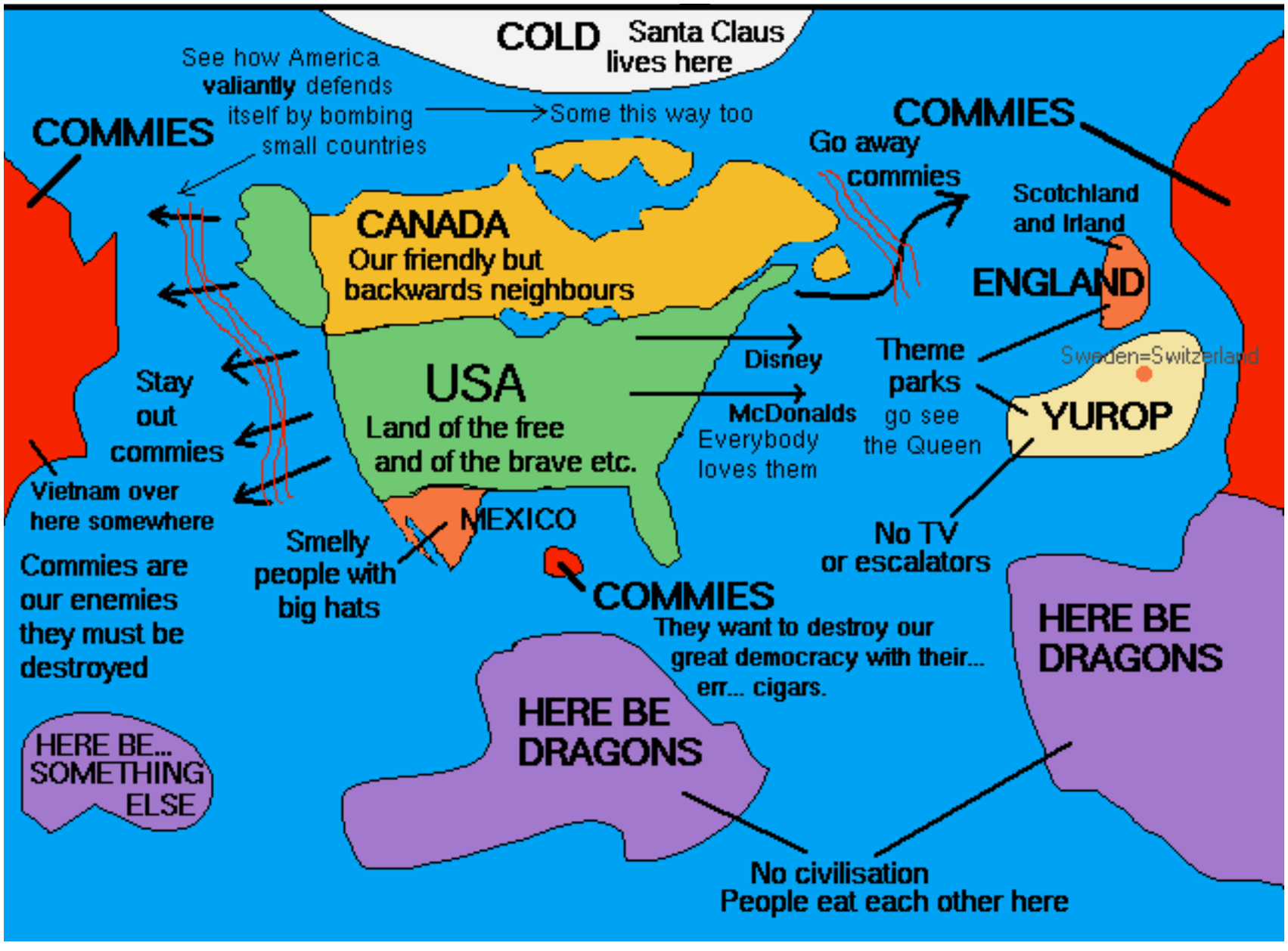
Controls

- Start with the human factor
- **Then** add technology

Know yourself, know your enemy

- Where do people leave data
  - **Hint** - spend time with developers.
- "Hack" the business process
- Test, test again, and then test. Follow with a surprise test!

Map your assets



"be true to yourself, not to what you believe things should look like"

Old chinese proverb

And monitor them!

They are YOUR assets
after all

No reason to be
shy about it...

And remember to add
honey...

Then...

TEST SOME MORE

Shameless Plug!

For hints/guides see: www.pentest-standard.org

Questions?

Thank **you**!

Go get your fix here:
www.security-art.com

Data modulation Exfil POC:
http://code.google.com/p/data-sound-poc/

Too shy to ask now?
iamit@security-art.com

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