KIITOS!


OULUN YLIOPISTO
LUOKKA 5A / OUSPG
LUOKANVALVOJAT:
JUHA RÖNING JA MARKO LAAKSO
8.2.2005

nsense

SISÄMINISTERIÖ
INRIKESMINISTERIET

FITSEC

TeliaSonera

Finnish Communications Regulatory Authority
National Cyber Security Centre

UNIVERSITY OF OULU

Microsoft

PURDUE UNIVERSITY

CARNEGIE MELLON UNIVERSITY
PITTSBURGH PENNSYLVANIA 1900

F-Secure.

Clarified NETWORKS

ERICSSON

Tekes

OPOY

AusCERT

NOKIA

DNA

VTT

SYNOPSYS®

HUOLTOVARMUUSKESKUS
FÖRSÖRJNINGSBEREDSKAPSCENTRALEN
NATIONAL EMERGENCY SUPPLY AGENCY

codenomicon

XENSENSE

VALTIOVARAINMINISTERIÖ

Sun microsystems

CERT | Software Engineering Institute | Carnegie Mellon University

JPCERT CC®

CPNI®
Centre for the Protection of National Infrastructure

synopsys®
Silicon to Software™

Codenomicon

FRONTIER Starts

Clarified Networks

OUSPG was born

PROTOS Starts

PROTOS Spin-off

FRONTIER Spin-off

XenSense

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016

Buzz on the bug

PROTOS c06-snmp >160 vendors

PROTOS Genome Starts

FRONTIER VMWare award $100 000 + others

PROTOS Genome Yields tons of results

PROTOS Genome Bug bounties turned into a bug massacre

OUSPG Open

1996

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Last Updated Date:	Wed Dec 11 00:00:00 MST 1996

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Bulletin Number: 00137a
Title: Security Bulletin #00137a

un thanks Marko Laakso (University of Oulu, Finland) for his assistance i
his matter.

ADDENDUM

This is an amended version of Sun Microsystems Security Bulletin #00137,
which discussed recently released security patches for Solaris 2.5 and
2.5.1. The changes correct two mistakes. No new information is provided.

» Patches and Update
» Security Resources
» Recent Sun Alerts

FEEDBACK

Rough numbers

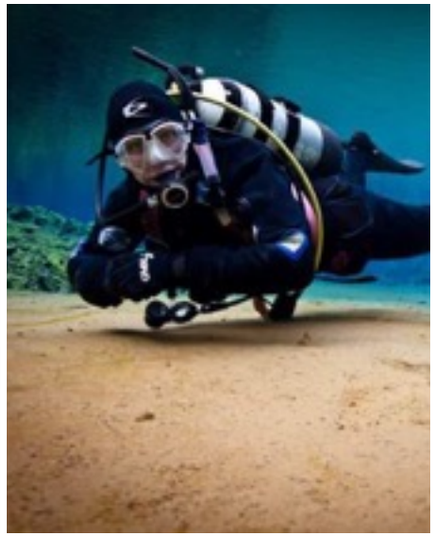
- *74* people worked for OUSPG
- *3* spin-offs
- worked with way over *100* vendors
- *Close to 200* theses produced or supervised
- *tens of millions* of browser users secured

Huippututkijat työssään

Careers


Mostly harmless?
GOVERNMENTWARE 2014
STRENGTHENING THE
CYBER SECURITY ECOSYSTEM


MANAGEMENT



1998

Bug Bounties Before They Were a Thing

NETSCAPE COMMUNICATIONS CORPORATION **No. 91797**

(650) 254-1900 501 EAST MIDDLEFIELD ROAD MOUNTAIN VIEW, CA 94043

DATE 20-AUG-98 CUST. ACCT. NO. VENDOR NAME LAAKSO, MARKO VENDOR NO. 14023

INVOICE NO.	INVOICE DATE	DESCRIPTION	DISCOUNT AMOUNT	NET AMOUNT
CK25773	12-AUG-98	BUG BOUNTY/AWARD/	0.00	1,000.00
		Thank You.	0.00	1,000.00

NETSCAPE COMMUNICATIONS CORPORATION
(650) 254-1900
501 EAST MIDDLEFIELD ROAD
MOUNTAIN VIEW, CA 94043

NETSCAPE

BANK OF AMERICA
Bank of America Illinois
Chicago, IL 60697

No. 91797

70-2328
719

CHECK DATE	CHECK NUMBER	CHECK AMOUNT
20-AUG-98	91797	*******1,000.00

PAY One Thousand Dollars And 00 Cents**********

AMOUNTS OVER $25,000 REQUIRE TWO SIGNATURES

TO THE ORDER OF
LAAKSO, MARKO
University of Oulu Department of
Elecrical Eng. Computer Eng.
Laboratory PL 444
Oulu, FI 90571
Finland

Norm G. Bug

1998

Date: Thu, 30 Jul 1998 16:36:27 +0300
From: Marko Laakso <fenris@ee.oulu.fi>
Content-Type: text
Content-Length: 3648

---------- Forwarded message ----------
Date: Thu, 30 Jul 1998 08:36:34 -0400
From: Josh Quittner <quittner@pathfinder.com>
To: Ari Takanen <art@ee.oulu.fi>
Subject: Re: Interview for TIME Magazine?

I'm sorry to hear that.

Why isn't OUSPG in a position to give interviews? It would be nice to find

[off the record, just food for your thoughts]

To reiterate, we believe that responsibility for the customer warnings, publicity and fixes is at the Vendor's end. To include an unbiased view point independent and coordinated efforts to issue warnings are lead by FIRST like organizations. If vendors fail to do it properly then maybe we have a fundamental problem that deserves public's attention.

My belief is that we have a rather fundamental software quality problem at our hands. It might be a good idea for someone to direct this discussion to a more generic discussion before public grows tired of hearing about yet another bug.

1998

You moved away
NEW Tivoli IT Director will manage your NT network.
Tivoli
Click Here

CNN interactive
CNN.com
MAIN PAGE
WORLD
U.S.
U.S. LOCAL
POLITICS
WEATHER
BUSINESS
SPORTS
SCI-TECH
computing
space
ENTERTAINMENT
TRAVEL
HEALTH
STYLE
IN-DEPTH
custom news
news summary
daily almanac
CNN networks

sci-tech > computing > st

Security gap
programs, pa

July 28, 1998
Web posted at: 8:50 p.m. EDT (0050 G

PALO ALTO, California (Reuters) -- Some of the m popular e-mail programs h security flaw that could all hackers to erase files or wr other damage on users' systems, The San Jose Mer News reported Tuesday.

The report called the flaw and said some experts beli surface in a decade.

BUSINESS
Technology

Home | Site Index | Site Search | F

Microsoft Daily News 7/29/98
Click here to get th
Microsoft tests Xing, Digi disproves allegations agai

July 29, 1998

Security Flaw Discove

By JOHN MARKOFF

SAN FRANCISCO -- A seriou popular e-mail programs publ Communications Corp. that would message containing a virus that cou steal data.

So far, security tests have shown th most popular e-mail programs, used around the world: Microsoft's Outlook Express and Outlook 98 and Netscape's Web browser, Navigator, which is part of its Communicator suite of Internet programs.

Computers

d a hole in Microsoft ms that could allow access to a computer er havoc.

following the arrival of crosoft email users rojan horse applications le destruction to data Trojan horse depends who writes the

email attachment can ser's hard drive or he user's machine," , group product r.

It's Free
WaveTop
click here

TECHNOLOGY
Today's Headlines

Net TVs Speak Same Lingo

Microsoft Patches NT Hole

software

son@macweek.com)
@macweek.com)

unications Corp. are scrambling to ail software that allows a Trojan horse

The problem affects both Mac and Windows versions of Microsoft's Outlook Express 4.x and Outlook 98, but apparently not the Mac version of Netscape's e-mail software.

2002

C06-SNMP (actually ASN.1)

Most people in the pic are not related to the story.

2002

WSJ.com THE WALL STREET JOURNAL. ONLINE

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Advanced Search | Symbol(s) | Nam

Other Journal Sites

As of 4:10 p.m. EDT Monday, June 10, 2002

Online Journal Subscribers LOG IN

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- Technology
- Markets
- Your Money
- Opinion
- At Leisure

In Today's Paper
Columnists
Portfolio
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Discussions
Site Map
Help

NEW MEDIA

FROM THE ARCHIVES: June 10, 2002

Is Internet Infrastructure At Risk for a Hack Attack?

By RIVA RICHMOND
DOW JONES NEWSWIRES

NEW YORK -- Computer-security experts are investigating whether poor programming around a key building-block computer language puts Internet infrastructure at risk for hacker attacks.

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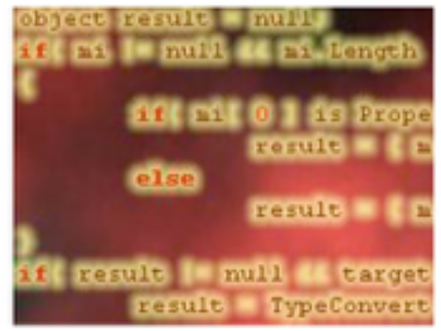
tietoturva

» kaikki uutiset | Tietoturva

Howard Schmidt:

Suomalainen tietoturvatutkimus herätti Valkoisen talon



2.5. 14:20 **- Oulun yliopiston tutkimuslöydöt muuttivat dramaattisesti näkemystämme teknologiasta, julisti USA:n johtaviin tietoturva-asiantuntijoihin kuuluva Howard Schmidt Suomessa käydessään.**

George W. Bushin hallituksen entinen tietoturvaneuvonantaja **Howard Schmidt** puhui Oulun yliopistolla 28.4. pidetyssä Vulnerability Prevention and Software Security -seminaarissa.

Schmidtin mukaan Oulun yliopiston ja VTT:n Protos-projektissa tekemät tutkimuslöydöt saivat Valkoisen talon havahtumaan käytössämme olevan

- Esittely
- Tietoyhteiskunta
- Asiointi ja palaute

Alkuun

Teletoiminta | Tietoturva | Sähköinen media | Radioliikenne | Internetin verkkotunn

Tietoturva: **Tietoturvaloukkausten havainnointi ja ratkaisu (CERT)**

- Asiakastiedotteet
- Tietoliikenneturvallisuus (COMSEC)
- Sähköinen allekirjoitus ja varmennetoiminta
- Televiestinnän tietosuoja
- Sähköinen kaupankäynti
- Tietoturvaloukkausten havainnointi ja ratkaisu (CERT)
  - CERT-FI
  - **Varoitukset**

CERT-FI varoitus 10/2002

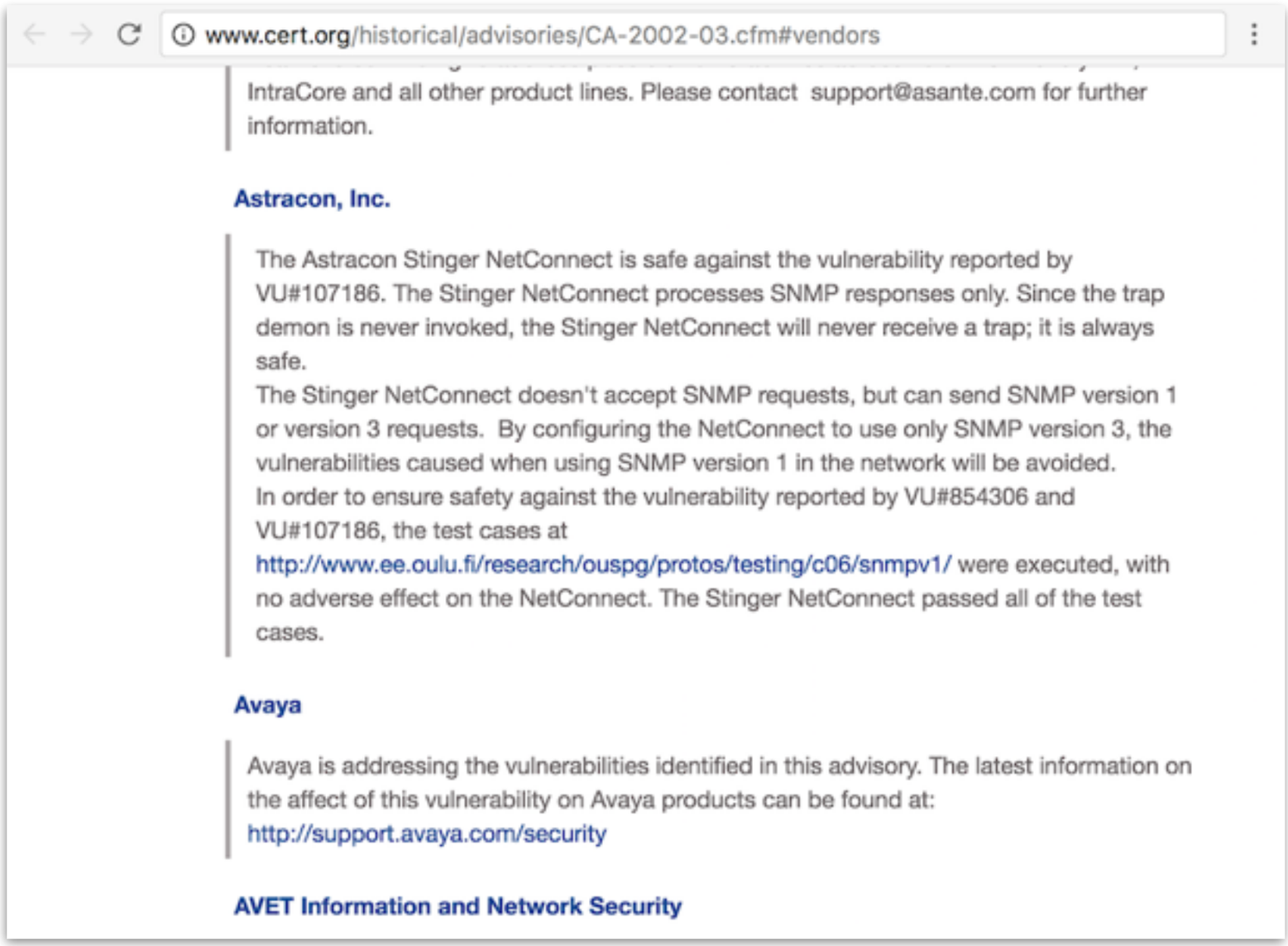
13.2.2002

Haavoittuvuuksia SNMP-protokollassa

SNMP (The Simple Network Management Protocol)-protokolla on laajalti eri tietojärjestelmäympäristöissä käytössä oleva protokotolla. Sitä käytetään verkkolaitteiden monitorointiin ja ylläpitoon. Protokollasta on löydetty useita haavoittuvuuksia. Ne liittyvät SNMP-versioon yksi (v1).

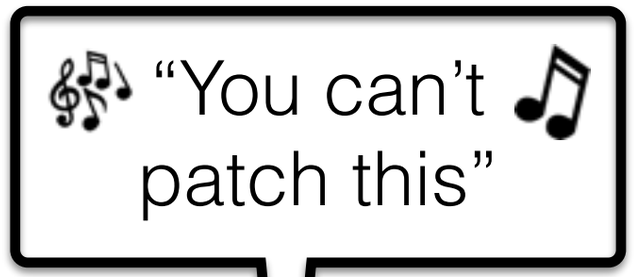
2002

>160 vendors used the test tool



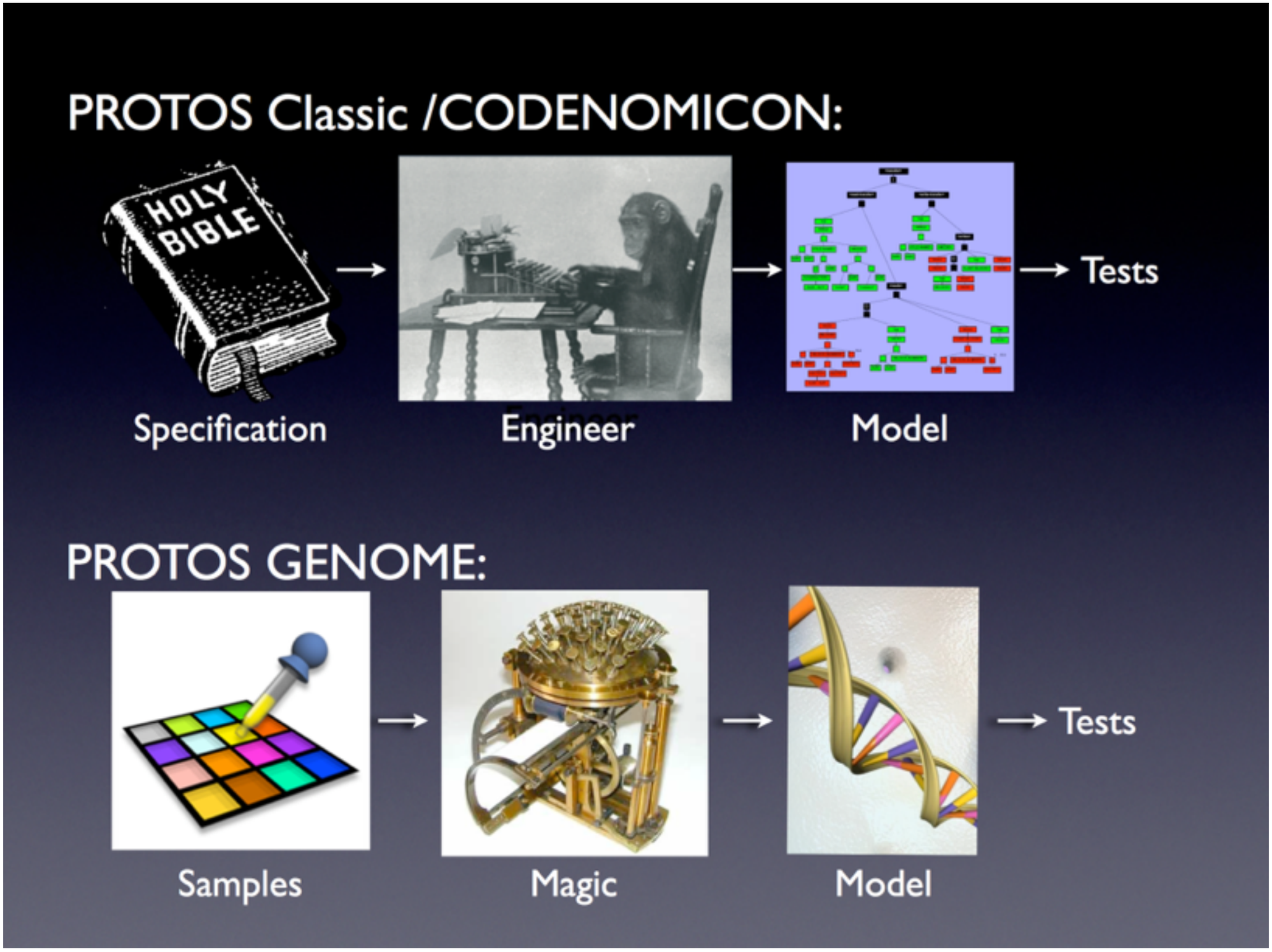
2002

Vulnerabilities went mobile



2005

PROTOS - a tough act to follow?



2011

Modern bounties

Bounty Hunters - a different kind of popularisation

Chromium > Chromium Security >

Security Hall of Fame

The following bugs qualified for a Chromium Security Reward, or represent a win at our Pwnium competition. On behalf of our millions of users, we thank the named researchers for helping make Chromium safer.

This information is historical and isn't being updated. The Chrome Security Reward program hall of fame is centralized with other Google properties. You can create and view entries on the Google Hall of Fame.

- $60000 to Sergey Glazunov for bug 117226
- $60000 to PinkiePie for bug 117620
- $40000 to PinkiePie for bug 181083 and others
- $31336 to Ralf-Philipp Weinmann for bug 227181 and others
- $30000 to someone who wishes to remain anonymous
- $30000 to someone who wishes to remain anonymous
- $21500 to Andrey Labunets for bug 252062 and others
- $10000 to miaubiz for bug 116661
- $10000 to Aki Helin from OUSPG for bug 116662
- $10000 to Arthur Gerkis for bug 116663
- $10000 to Sergey Glazunov for bug 143439
- $10000 to miaubiz for bug 157047
- $10000 to Atte Kettunen for bug 157048
- $10000 to Christian Holler for bug 157049
- $7331 to PinkiePie for bug 162835

We are doing something about that in:

OUSPG Open

Taking OUSPG out of the box

- Open Sessions
  - 15 so far,
  - 96 engagements,
  - 50+ persons, from
  - 23 organisations

Fresh blood

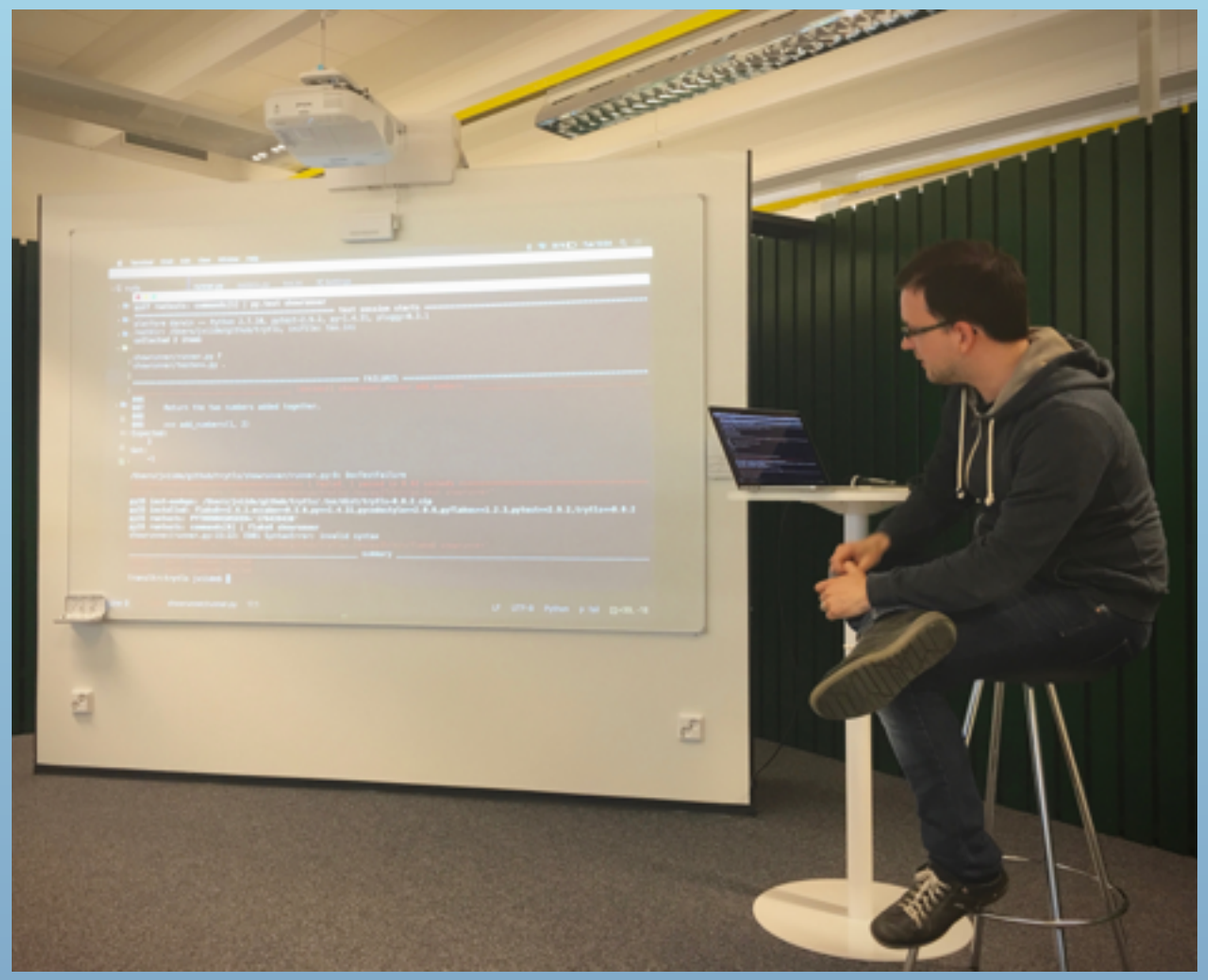
teams up for social enterprise / experiment

- 3 month sprints for 4(ish) topics
  - TryTLS
  - Libfuzzerfication
  - Honeypots
  - URLHandlers
- A chance to pick new brains
- Fresh blood gets intro to the infosec

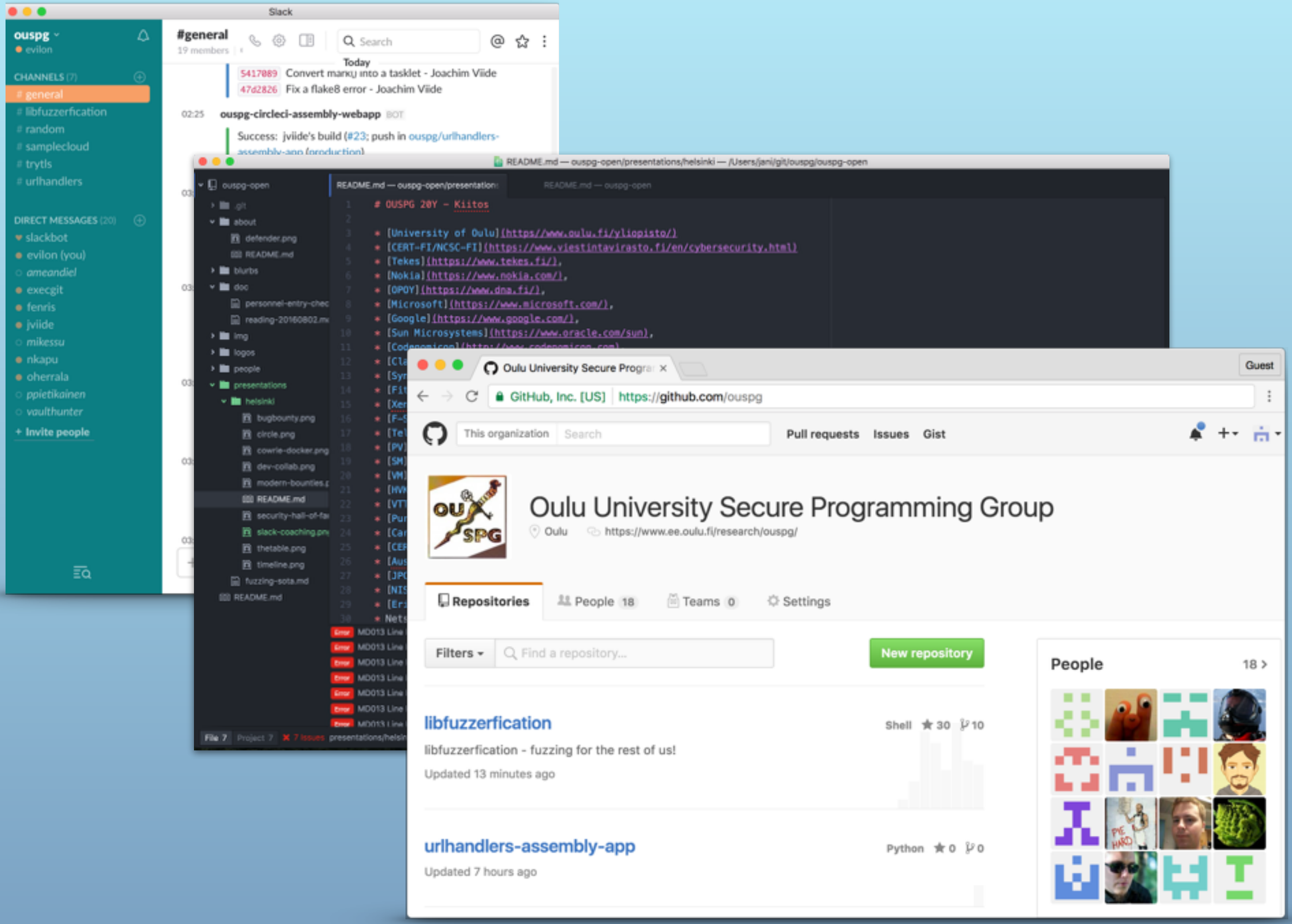
Pic from True Blood Series

Indoctrination

Indoctrination is the process of forcibly inculcating ideas, attitudes, cognitive strategies or a professional methodology (see doctrine) by coercion.[1]



[1] https://en.wikipedia.org/wiki/Indoctrination


Slack
ouspg
evilon
CHANNELS (7)
general
libfuzzerfication
random
samplecloud
trytls
urlhandlers
DIRECT MESSAGES (20)
slackbot
evilon (you)
ameandiel
execgit
fenris
jviide
mikessu
nkapu
oherrala
ppietikainen
vaulthunter
+ Invite people
#general
19 members
Search
Today
5417089 Convert manku into a tasklet - Joachim Viide
47d2826 Fix a flake8 error - Joachim Viide
02:25 ouspg-circleci-assembly-webapp BOT
Success: jviide's build (#23; push in ouspg/urlhandlers-
README.md — ouspg-open/presentations/helsinki — /Users/jani/git/ouspg/ouspg-open
ouspg-open
README.md — ouspg-open/presentation:
README.md — ouspg-open
.git
about
defender.png
README.md
blurbs
doc
personnel-entry-chec
reading-20160802.m
img
logos
people
presentations
helsinki
bugbounty.png
circle.png
cowrie-docker.png
dev-collab.png
modern-bounties.
README.md
security-hall-of-fa
slack-coaching.pn
thetable.png
timeline.png
fuzzing-sota.md
README.md
OUSPG 20Y - Kiitos
* [University of Oulu](https://www.oulu.fi/yliopisto/)
* [CERT-FI/NCSC-FI](https://www.viestintavirasto.fi/en/cybersecurity.html)
* [Tekes](https://www.tekes.fi/),
* [Nokia](https://www.nokia.com/),
* [OPOY](https://www.dna.fi/),
* [Microsoft](https://www.microsoft.com/),
* [Google](https://www.google.com/),
* [Sun Microsystems](https://www.oracle.com/sun),
Error MD013 Line
File 7
Project 7
7 issues
presentations/helsin
Oulu University Secure Progra
Guest
GitHub, Inc. [US]
https://github.com/ouspg
This organization
Search
Pull requests
Issues
Gist
Oulu University Secure Programming Group
Oulu
https://www.ee.oulu.fi/research/ouspg/
Repositories
People 18
Teams 0
Settings
Filters
Find a repository...
New repository
libfuzzerfication
Shell ★ 30 10
libfuzzerfication - fuzzing for the rest of us!
Updated 13 minutes ago
urlhandlers-assembly-app
Python ★ 0 0
Updated 7 hours ago
People
18 >

	trytls	libfuzzerfication	urlhandlers	honeypots	samplecloud
Do you use source control?	1	1	1	1	1
Can you make a build in one step?	1			1	
Do you make daily builds (or CI)?	1		1	1	
Do you have a bug database?	1	1	1	1	1
Do you fix bugs before writing new code?					
Do you have an up-to-date schedule?	1	1	1	1	1
Do you have a spec?	1	1	1	1	1
Do programmers have quiet working conditions?	1	1	1	1	1
Do you use the best tools money can buy?	1	1	1	1	1
Do you have testers?	1	1	1	1	1
Do new candidates write code during their interview?					
Do you do hallway usability testing?	1	1	1	1	1
Total score	10	8	9	10	6

Dev Collaboration Flags

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

	A	B	C	D	E	F	G
2	**First time done \ Who**	person1	person2	person3	person4	person5	
3	**Basics**						
4	Commit to repo	1	1	1	1	1	**5**
5	Comment commit	1	1			1	
6	Open issue		1	1	1	1	**4**
7	Comment issue		1	1	1	1	**4**
8	Close issue	1	1	1	1	1	**5**
9	Create / Edit Markdown-document	1	1	1	1	1	**5**
10	Use .gitignore	1	1			1	**3**
11	Use .dockerignore				1		**1**
12	Add a license to your project		1	1	1	1	**4**
13	**Pull Requests**						
14	Branch (or fork)	1	1	1	1	1	**5**
15	Create pull request	1	1	1	1	1	**5**
16	Comment someone's pull request		1			1	**2**
17	Review a pull request	1	1	1	1	1	**5**
18	Merge pull request	1	1	1	1	1	**5**
19	Solve a merge conflict		1		1	1	**3**
20	**Cross-referencing**						
21	Refer to ticket in a commit		1			1	**2**
22	Use @mention in github		1			1	**2**
23	**Advanced Tooling**						
24	Set up CI					1	**1**
25	Enable --force protection for master		1	1	1	1	**4**
26	Publish on dockerhub				1	1	**2**
27	Use dockerhub "CI" to auto-build from github				1	1	**2**
28	**Fly out of the nest**						
29	Submit a patch or pull request to third party a upstream					1	**1**
30	Have your upstream patch or pull request accepted					1	**1**
31	**Total**	**9**	**17**	**11**	**15**	**22**	**71**

Debates

My naive attempt to ~~fix~~ tackle an old problem in the modern setting

Why this is important?

- We suck at being **rational**
  - We should increase the odds for **rational decisions**
- One of the few things we can manage is **how we use our time**
- It is sad to watch smart people trying to communicate their point and fail

So how did I become a respected author on this topic?

- I didn't. I'm just a hobbyist.

How to start a debate?

- Somebody comes up with an idea
- Works with it (invests to it, becomes familiar with it)
- And then somebody questions it... tadaa.

Oh, I just described a mini-version of the Sunk cost fallacy

Questioning is, however, important

- But pick your battles - it takes time * participants
- If used too much, may block innovation?
- But still a necessity for **rational(ish) decisions**
  - (we suck at being rational)

I recently tried to analyze a debate

FAILED

- I kept losing track even though I had the log and took my time
- Several threads for seemingly same discussion
- Temporal distortions (Déjà-vu)
- Arguments were orbiting an unidentifyable problem
- Some key arguments were seemingly ignored. I got curios - why?

Reading / Listening

Books I've apparently read according to the Internet

Podcasts

Try to align where you can

- Don't drop the ball if you don't understand the opposite argument
- Ask -> Answer -> Ask -> Ask -> Answer -> Align

"No ought from an is"

- E.g. The Hume's guillotine
- Of course it is good to know how the rest of the world operates
- This, however, should not be the key argument
- We don't want to be the Angry Monkeys

We suck at being rational

- Our brains are specialised in coming up with an **opinion first** and having an **explanation** for it **later**.
- Our brain is **very good** at deceiving us in other fronts
- You think you see colours equally around you?
- Full vision? No spots?
- Magic tricks, mentalists, the scientific method - quite a lot of things/professions work with or around our fallacies.

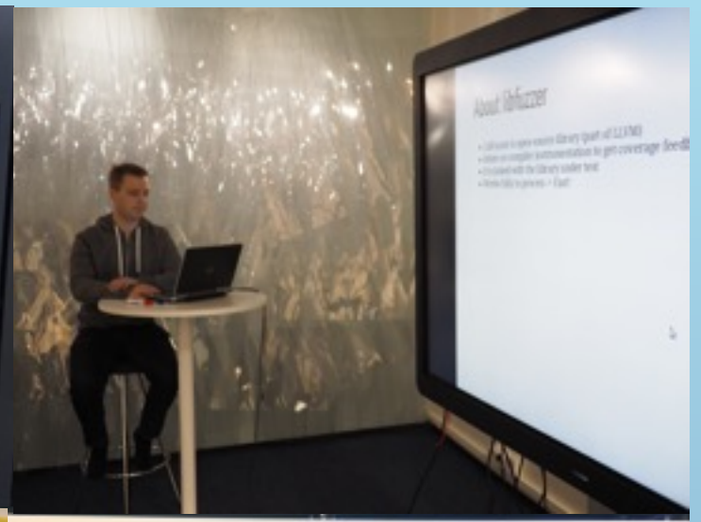
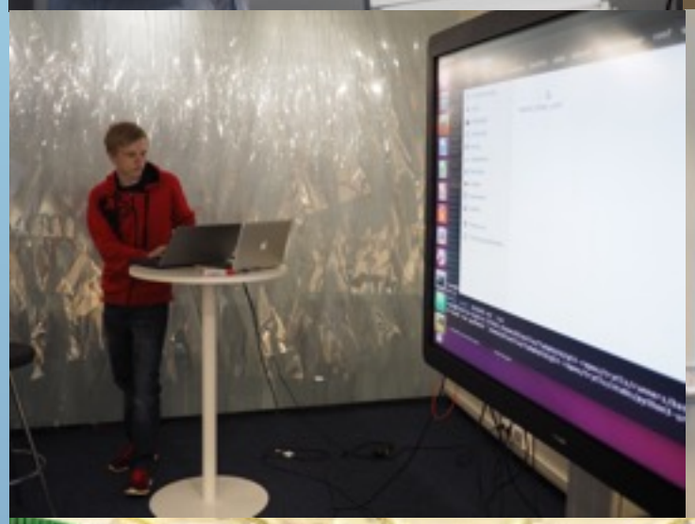
We suck at communicating - so bad that there was a professor to study it

Understanding the alternative

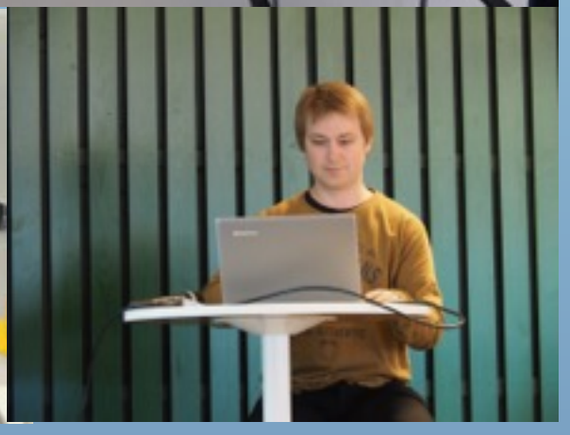
- Proposed solution might be outside my box
- I need to do the effort to figure out if it is a good *solution*
- Prerequisite for that is that I understand and **see** the solution
- Example from our previous debate: "one repo for a product" *requirement*
  - If I haven't used pull requests up to their full potential, combining requests, issues, comments etc - how could I appreciate the argument?
  - So now I understand that I need give up thing X I understand well, to get vague thing ? in return.
  - No thanks. <- I've may have made a bad decision.

Videos





What we have learned

“Companies tend to be time-capsules of the time they were incorporated.”
-Marko Laakso

- OUSPG Open looks like an excellent platform for refresh
- Insanely repo-centric workflows - can’t live without them anymore
- Operating Publicly does not hurt either
- Magical 3 months (more on this later)

Some things do not seem to change

Tooling vs Reporting

```
bash-curl/results.txt: FAIL incomplete chain of trust [reject incomplete-chain.badssl.com:443]
bash-opensslSClient/results.txt: FAIL wrong hostname in certificate [reject wrong.host.badssl.com:443]
bash-opensslSClient/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
bash-opensslSClient/results.txt: FAIL invalid localhost certificate [reject localhost:55087]
bash-opensslSClient/results.txt: FAIL use only the given CA bundle, not system's [reject sha256.badssl.com:443]
haskell-http-client-tls/results.txt: FAIL wrong hostname in certificate [reject wrong.host.badssl.com:443]
haskell-http-client-tls/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
haskell-wreq/results.txt: FAIL wrong hostname in certificate [reject wrong.host.badssl.com:443]
haskell-wreq/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
lua5.1-luasec/results.txt: FAIL invalid localhost certificate [reject localhost:34955]
php-file-get-contents/results.txt: FAIL support for TLS server name indication (SNI) [accept badssl.com:443]
php-file-get-contents/results.txt: FAIL SHA-256 signature [accept sha256.badssl.com:443]
python-idiokit/results.txt: FAIL support for TLS server name indication (SNI) [accept badssl.com:443]
python-idiokit/results.txt: FAIL SHA-256 signature [accept sha256.badssl.com:443]
python-idiokit/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
python-requests/results.txt: FAIL incomplete chain of trust [reject incomplete-chain.badssl.com:443]
python-requests/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
python-requests/results.txt: FAIL use only the given CA bundle, not system's [reject sha256.badssl.com:443]
python-urllib2/results.txt: FAIL incomplete chain of trust [reject incomplete-chain.badssl.com:443]
python-urllib2/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
python-urllib2/results.txt: FAIL use only the given CA bundle, not system's [reject sha256.badssl.com:443]
python-urllib3/results.txt: FAIL incomplete chain of trust [reject incomplete-chain.badssl.com:443]
python-urllib3/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
python-urllib3/results.txt: FAIL use only the given CA bundle, not system's [reject sha256.badssl.com:443]
python3-urllib/results.txt: FAIL incomplete chain of trust [reject incomplete-chain.badssl.com:443]
python3-urllib/results.txt: FAIL protect against the Logjam attack [reject www.ssllabs.com:10445]
python3-urllib/results.txt: FAIL use only the given CA bundle, not system's [reject sha256.badssl.com:443]
```

GitHub, Inc. [US] https://github.com/ouspg/trytls/blob/master/cases/osx-10.11.5.md

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Branch: master ▾ trytls / cases / osx-10.11.5.md Find file Copy path

aleksiklasila ACCEPT/REJECT instead of VERIFY SUCCESS/FAILURE b93c7cb 7 days ago

2 contributors

96 lines (71 sloc) 3.36 KB Raw Blame History

OS X OpenSSL verification surprises

When using native python shipped with OS X, the system default bundle will be trusted even if instructed otherwise. This is troubling, as some organizations do not want to trust the default bundles. Also, lately, the reputation of some CAs have been brought into question.

Not a new issue

This issue has been reported already 2014-03-03 by Hynek Schlawack. CVE-2014-2234 describes the vulnerability exists on *A certain Apple patch for OpenSSL in Apple OS X 10.9.2*. However, we have reproduced it in OS X 10.11.5 (15F34) 2016-06-12. The same behavior was observed with other python libraries (e.g. urllib3, and requests) - as long as the python shipped with OS X was used.

http-client-tls vulnerable to Logjam? #215

Open **oherrala** opened this issue 18 days ago · 0 comments

oherrala commented 18 days ago

ssllabs.com has test for Logjam in their client tests. This is probably issue in Haskell's tls library instead of `http-client-tls` . Ping **@vincenthz** .

```
Prelude> import Network.HTTP.Client
Prelude> import Network.HTTP.Client.TLS
Prelude> manager <- newManager tlsManagerSettings
Prelude> request <- parseRequest "https://www.ssllabs.com:10445/"
Prelude> response <- httpLbs request manager
Prelude> print response
Response {responseStatus = Status {statusCode = 200, statusMessage = "OK"}, responseVersior
```

I expect this simple test to throw exception or fail otherwise instead of succesful connection.

Chrome, Firefox and Safari don't allow connection to this test host.

This was found with TryTLS test tool: https://github.com/ouspg/trytls

I recently tried to analyze a debate

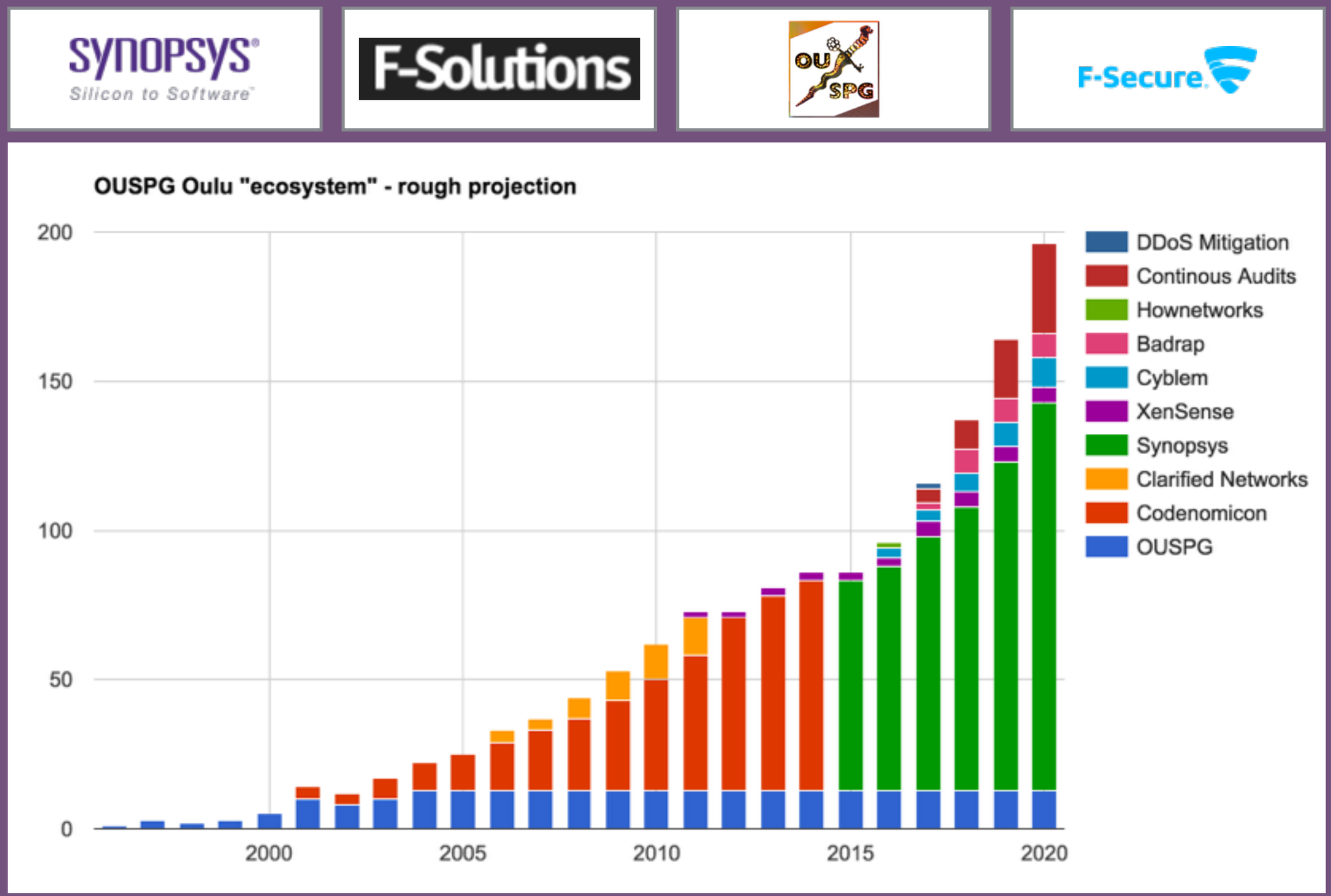
FAILED

- I kept losing track even though I had the log and took my time
- Several threads for seemingly same discussion
- Temporal distortions (Déjà-vu)
- Arguments were orbiting an unidentifyable problem
- Some key arguments were seemingly ignored. I got curios - why?

Future - Oulu?

Infosec? Cyber?

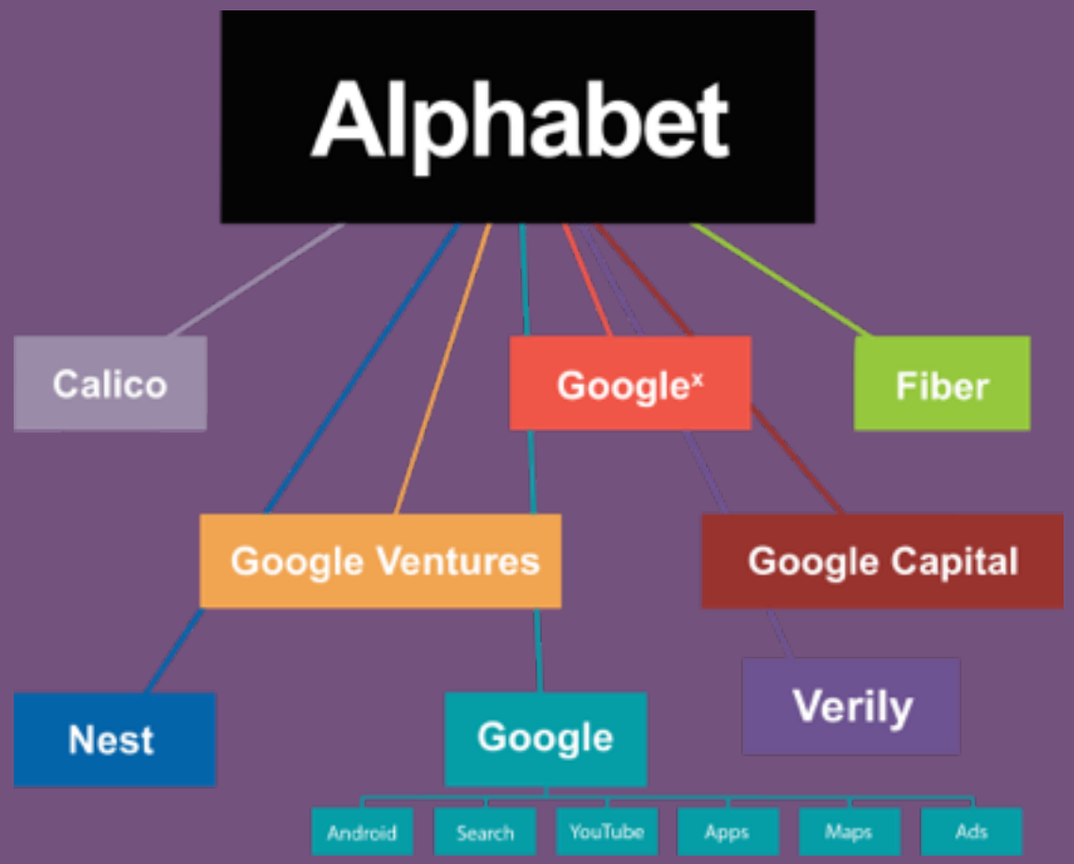
Oulu - We have a problem



Also, itching to do all the cool things that we could have done but didn’t

(focus / lack of people)

Somebody figured out how to pull it off



Ääkköset

- Demonstrate that markets exist for doing the right thing (™)
- Providing a fair shot to disrupt the status quo
- For smart people with:
  - huge potential, but ambitions have been gapped by <whatever>
  - who want to try out an idea and are ready to move to another topic if it fails
- An instrument for investing to interesting technology-related business ideas

Fly or Recycle