The Future of Internet Of Things (IoT)

ROY WATTANASIN

BOSTON UNIVERSITY SECURITY CAMP

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whoami

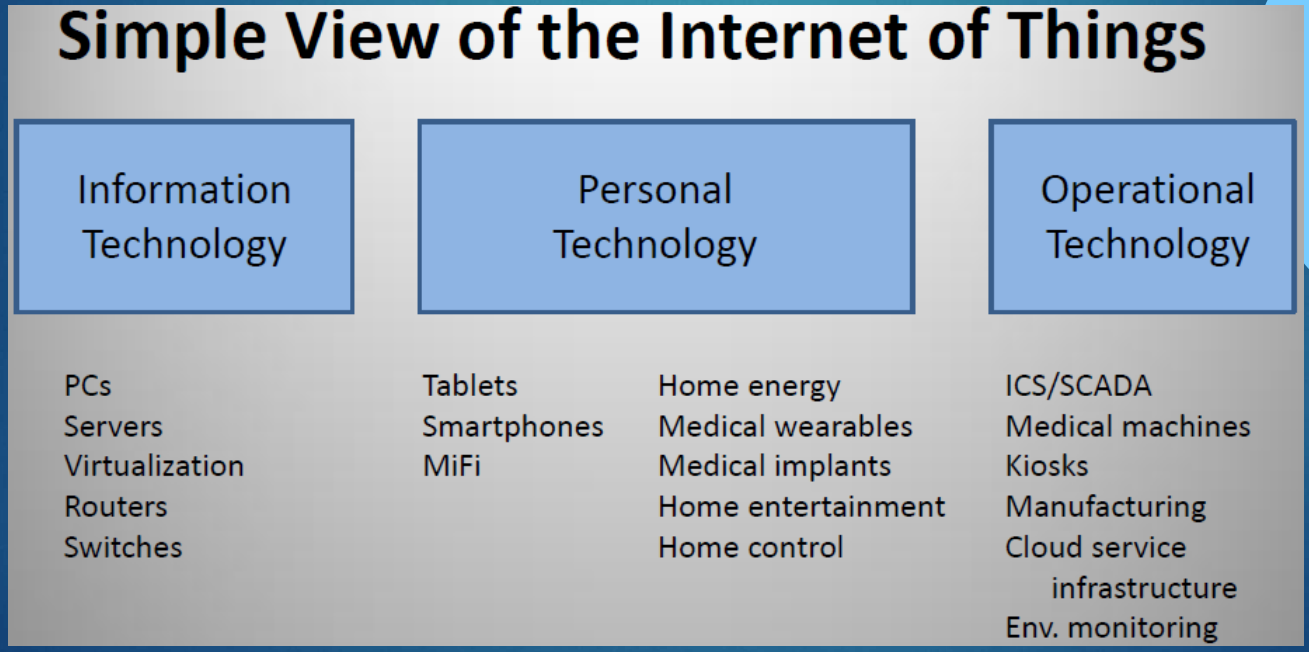
- Healthcare and education
- Information Security & Risks
- Organizer of Security BSides Boston 2013/2014. More information at http://www.bsidesboston.com
- A Medsec (Linkedin) and a “I Am The Cavalry” member
- @wr0 and websecr at gmail dot com or come say hi!

Agenda

- Introduction to Internet Of Things (IoT)
- Problem
- Future
- Risks, followed by an Apple IOS example
- Recommendations

Introduction

- “ “ = Healthier, efficient, stronger
- What are you wearing today?



SANS Webcast, “Securing the Internet Of Things”

Introduction

- These can be (and not limited to):

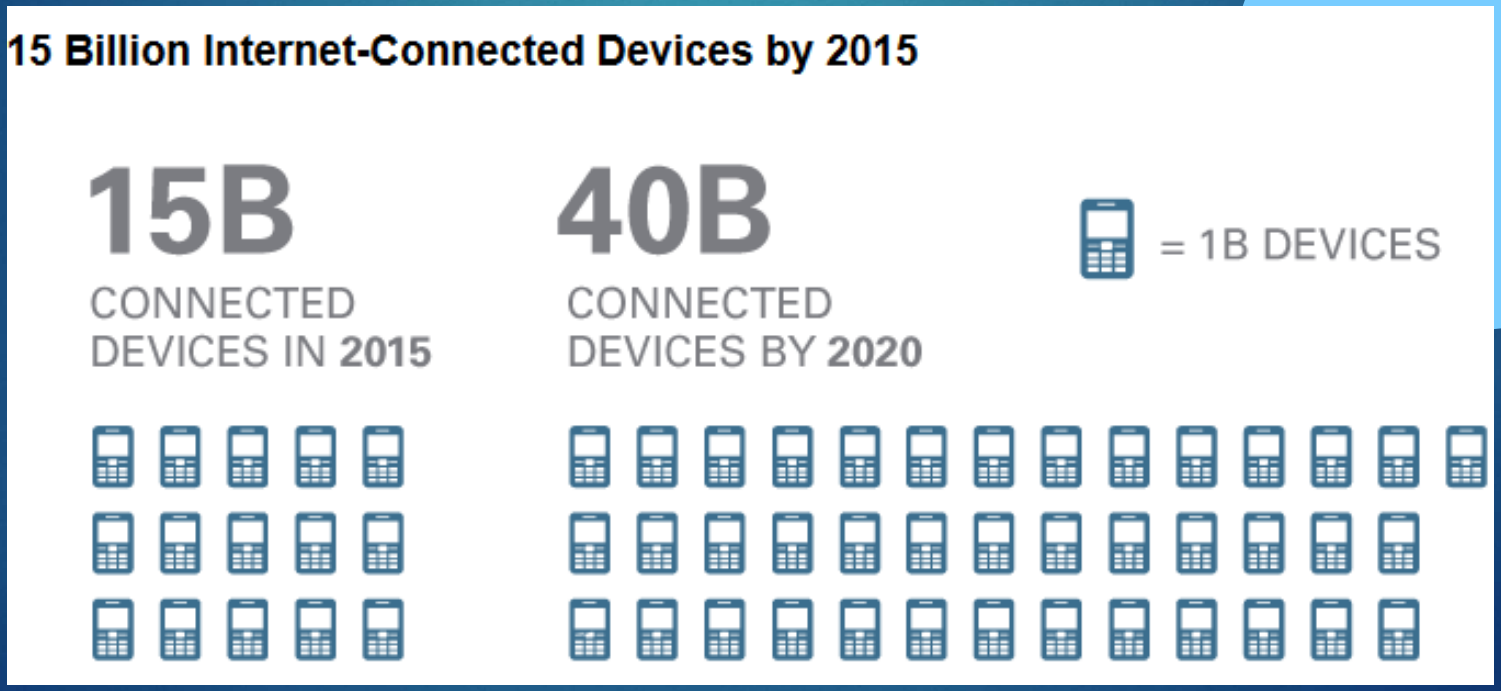
garage door openers
medical devices
mobile devices
cellphones
vehicles
watches
glasses
light bulbs
sensors
appliances
toothbrushes
hearing aids
smart tvs

Introduction

- IoT
  - Embedded (OS, Applications)
  - Heterogeneous
  - Multiple interfaces
  - Consumer-driven
  - Impacts people (health, safety, privacy)
  - Many and multiple years lifecycle

Problem

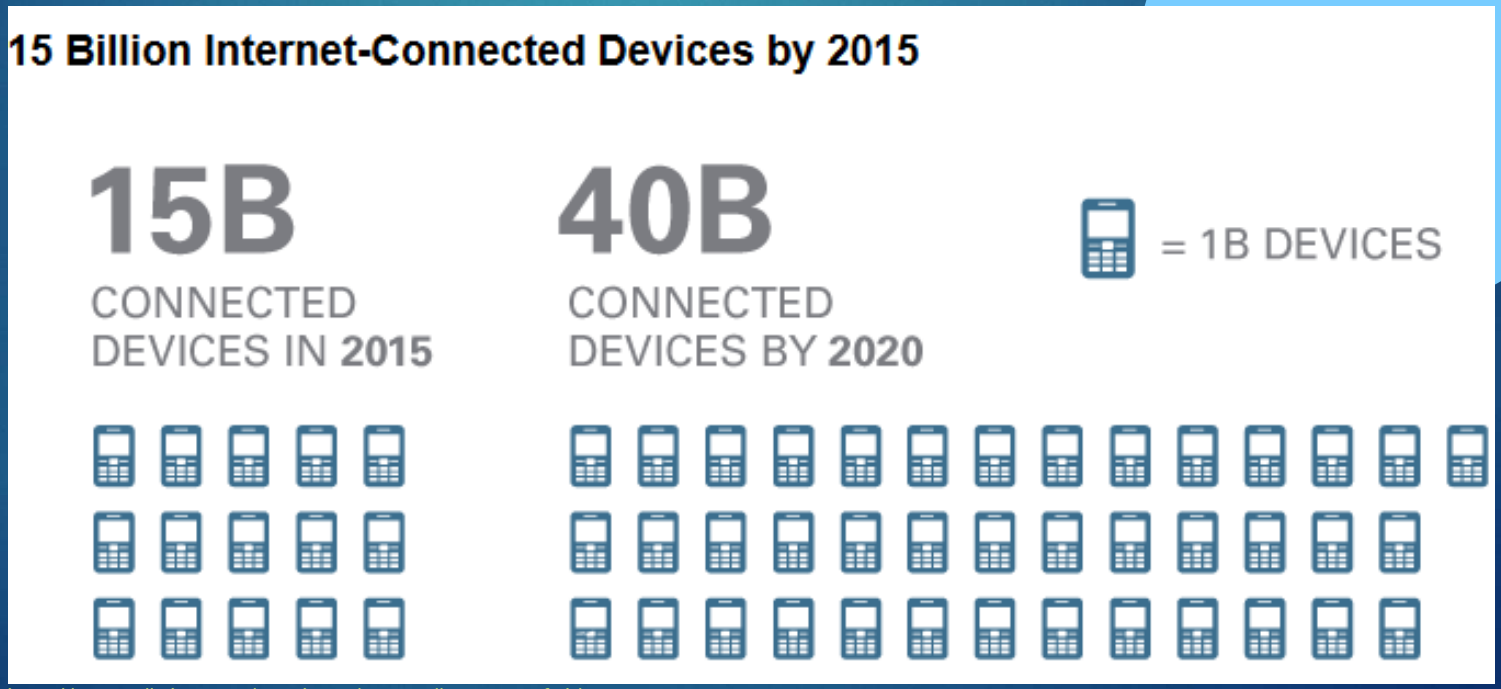
- The Internet has connected any thing . . .



http://www.silabs.com/products/pages/internet-of-things.aspx

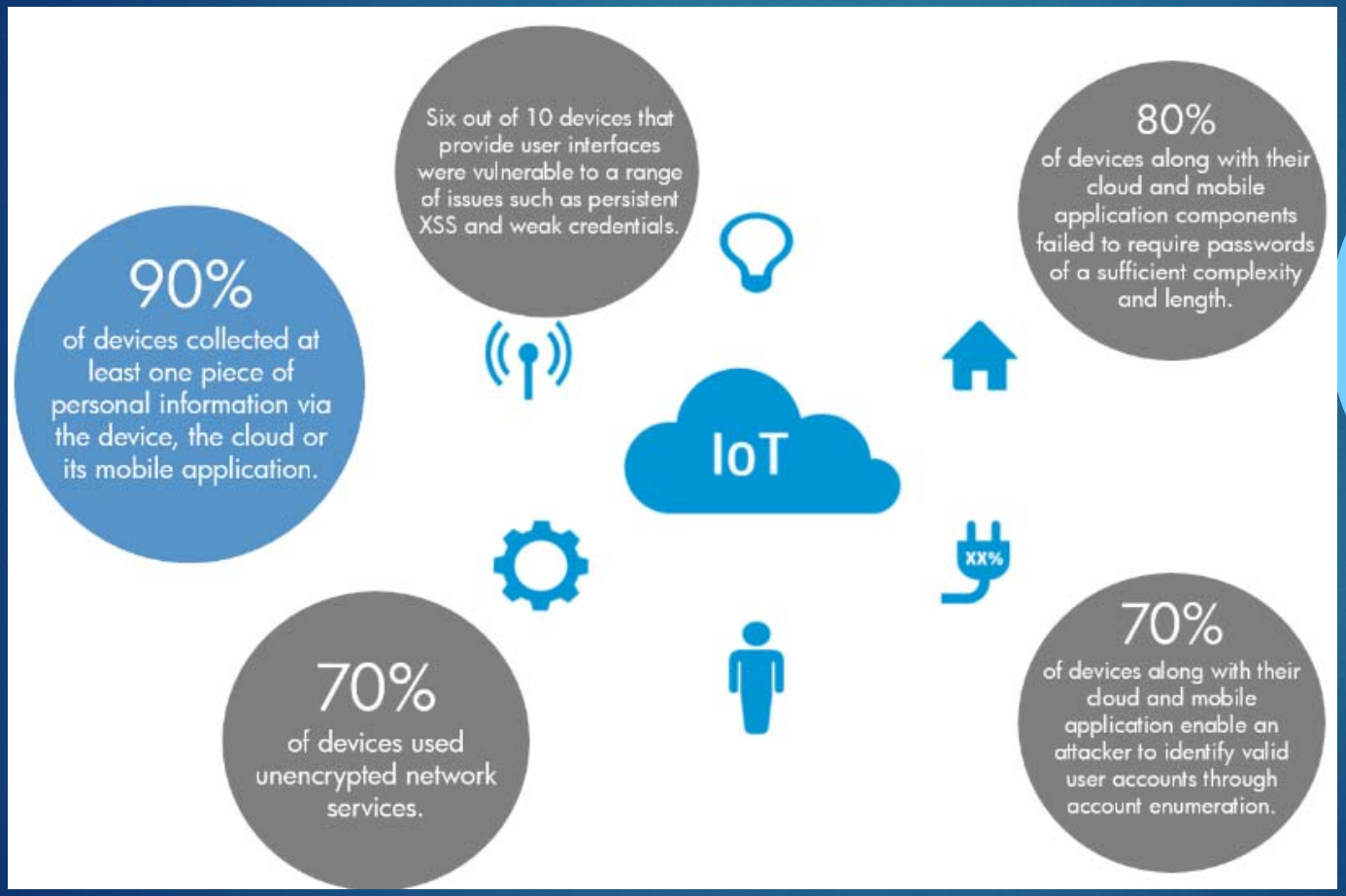
Problem

7,255,210,285



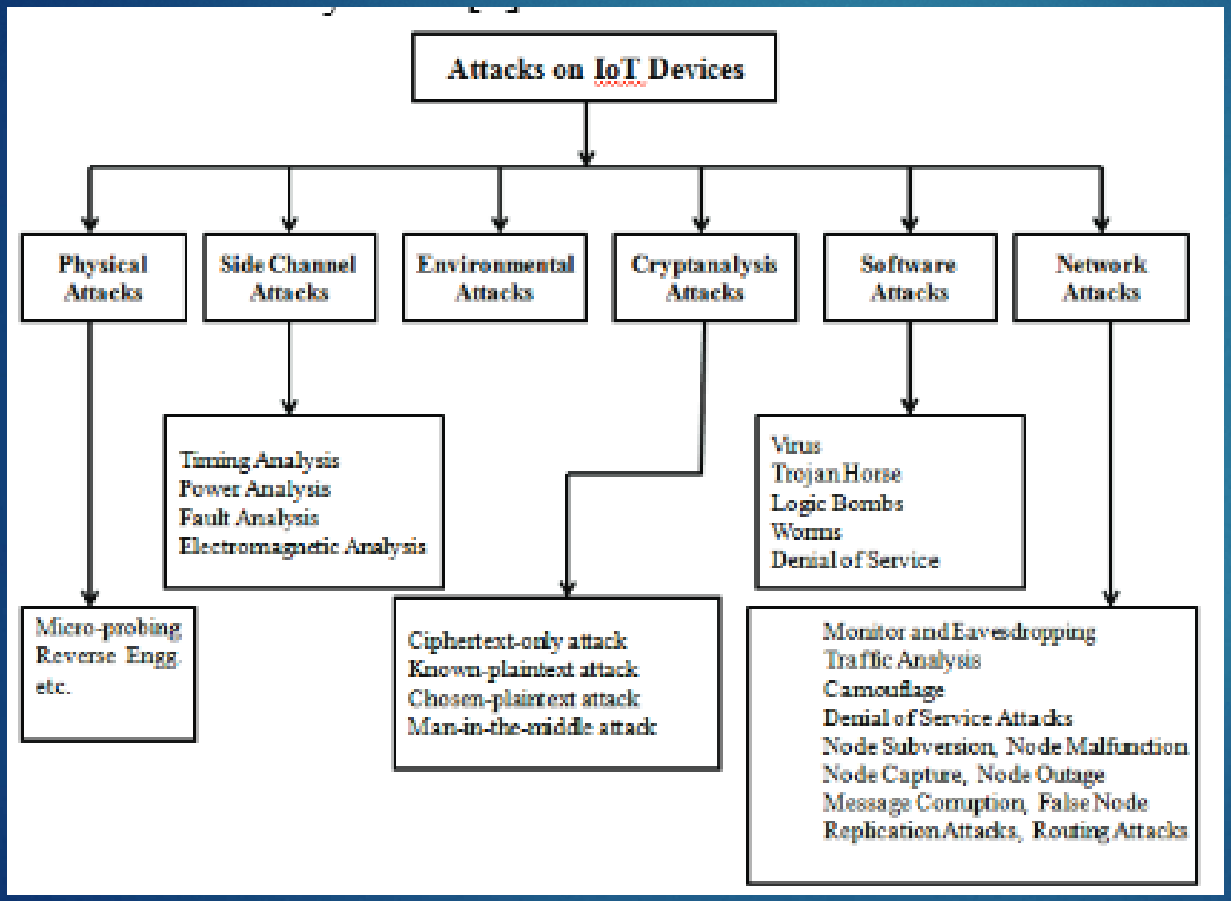
http://www.silabs.com/products/pages/internet-of-things.aspx

Results



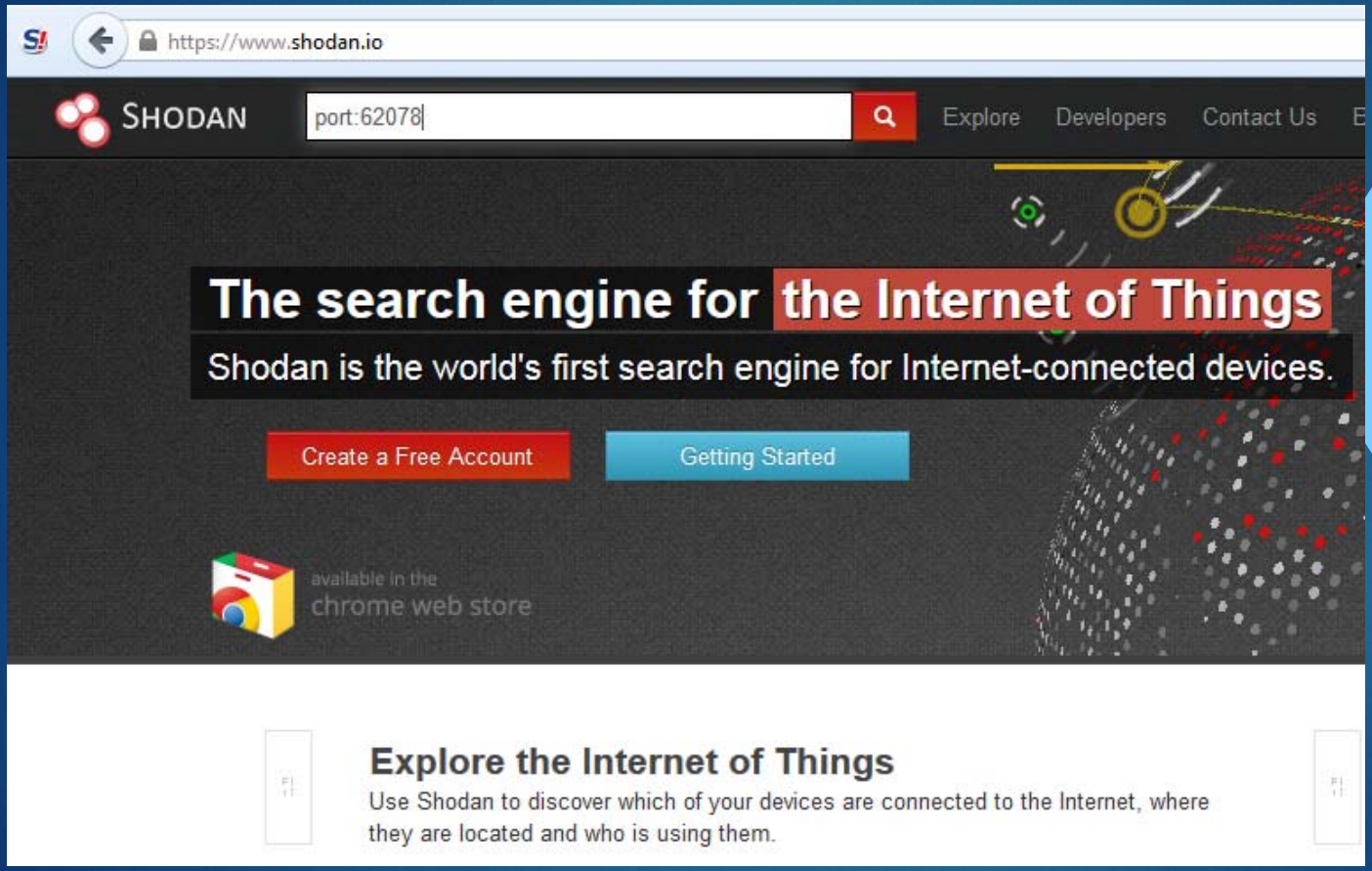
http://fortifyprotect.com/HP_IoT_Research_Study.pdf

Attacks on IoT

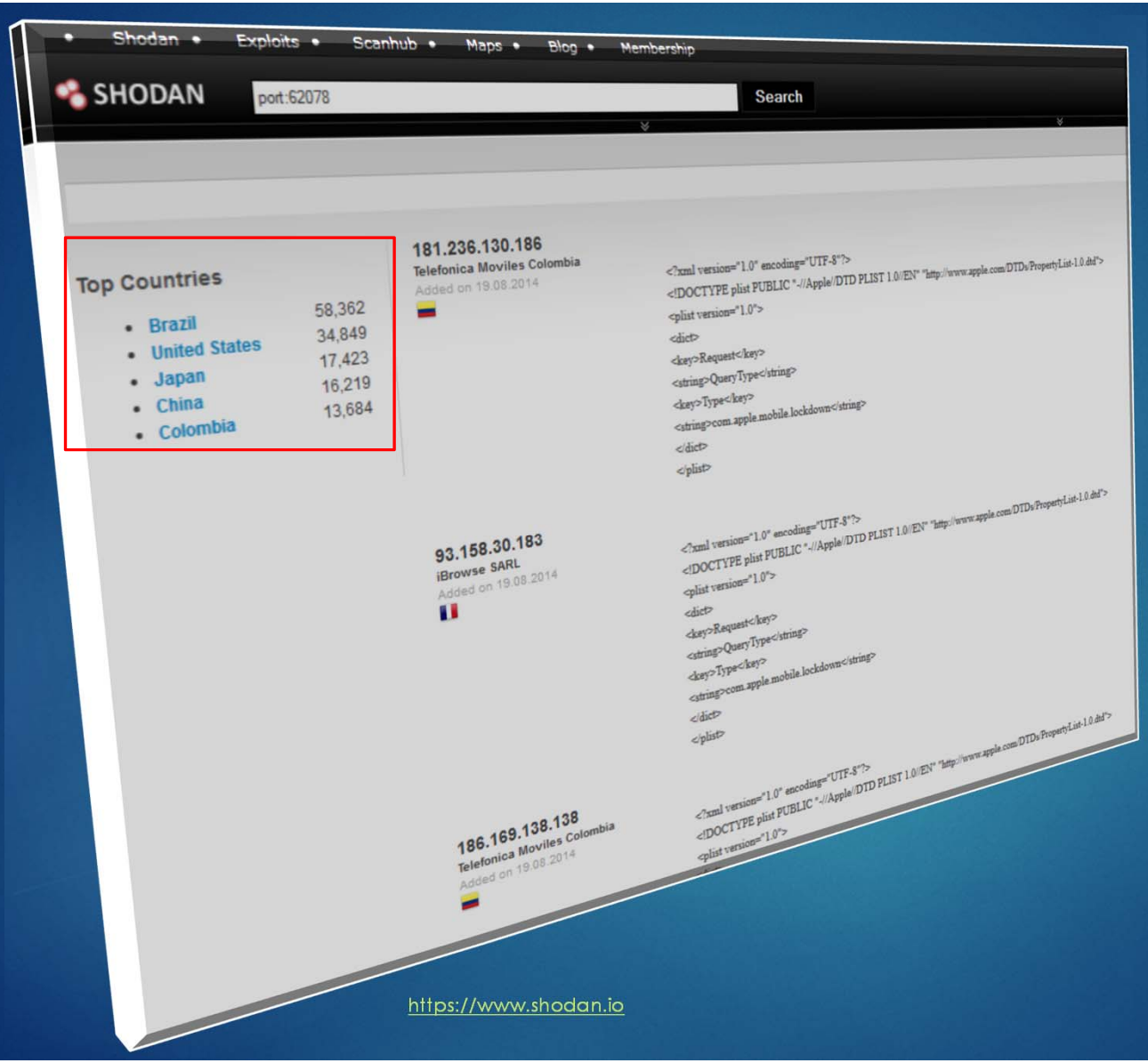


http://www.inf.ufpr.br/rtv06/iot/05940923.pdf

Got Shodan ?



https://www.shodan.io



https://www.shodan.io

Average Internet of Things device has 25 security flaws

In a study of ten devices including home thermostats, remote power outlets and door locks, HP found 250 potentially dangerous security vulnerabilities

Ikea's vision of the connected home is one that should be adopted by businesses Photo: IKEA

http://www.telegraph.co.uk/technology/internet-security/11000013/Average-Internet-of-Things-device-has-25-security-flaws.html

Recommendations

- Conduct a review of all the device components
- Implement security standards before any implementation
- Ensure that security is throughout the lifecycle
- Thoroughly keep testing and testing again
- Hire a third party for testing
- Work and network with other colleagues and IoT groups and manufacturers
- Review IoT security frameworks
- AoT?

Questions

- ???
- ??
- ?

Resources

- Hackable Light Bulbs, http://www.infosecurity-magazine.com/news/for-the-internet-of-things-even-a/
- Internet of Everything Secure Framework, http://blogs.cisco.com/sp/internet-of-everything-ioe-secure-framework/
- Security Framework for IoT, http://www.infosecurity-magazine.com/news/mcafee-plots-security-framework/
- Shodan, http://www.shodanhq.com
- Smart TVs, http://www.infosecurity-magazine.com/news/black-hat-2013-researchers-demo-how-smart-tvs-can/
- The CIA Fears of IoT, http://www.nextgov.com/defense/2014/07/cia-fears-internet-things/89819/
- The Open Interconnect Consortium ,http://openinterconnect.org/