



@RobertEStroud



FUTURE CHALLENGES IN A DYNAMIC WORLD

Robert E Stroud, Immediate Past Chair, ISACA International
Principal Analyst, Forrester Research

RStroud@Forrester.com
June 2016

ROBERT E STROUD

- Principal Analyst, Forrester Research
- 2014-2015 ISACA International President
- Futurist, Author & Industry Luminary
- 15 years Banking Experience
- Contributor to industry frameworks, ISO standards and good practices (COBIT, ITIL & ISO standards)
- Former Director itSMF International & itSMF USA
- Social Media: @RobertEStroud
- Rstroud@Forrester.com

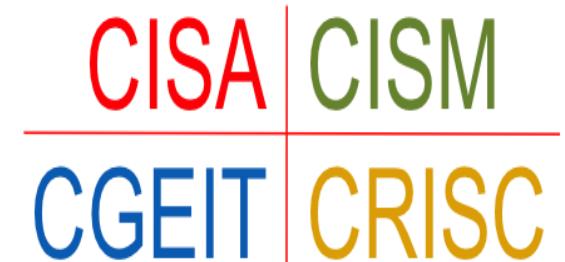
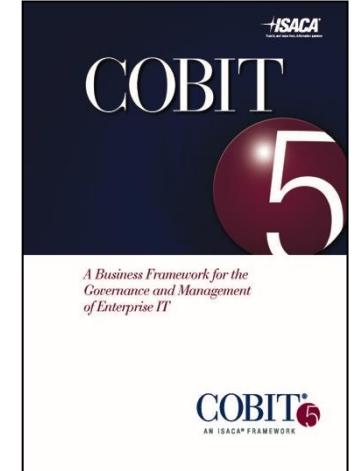


ISACA

“Trust in, and value from, information systems”

**Global association serving Audit,
Assurance, Cybersecurity, Governance,
Security and Risk professionals**

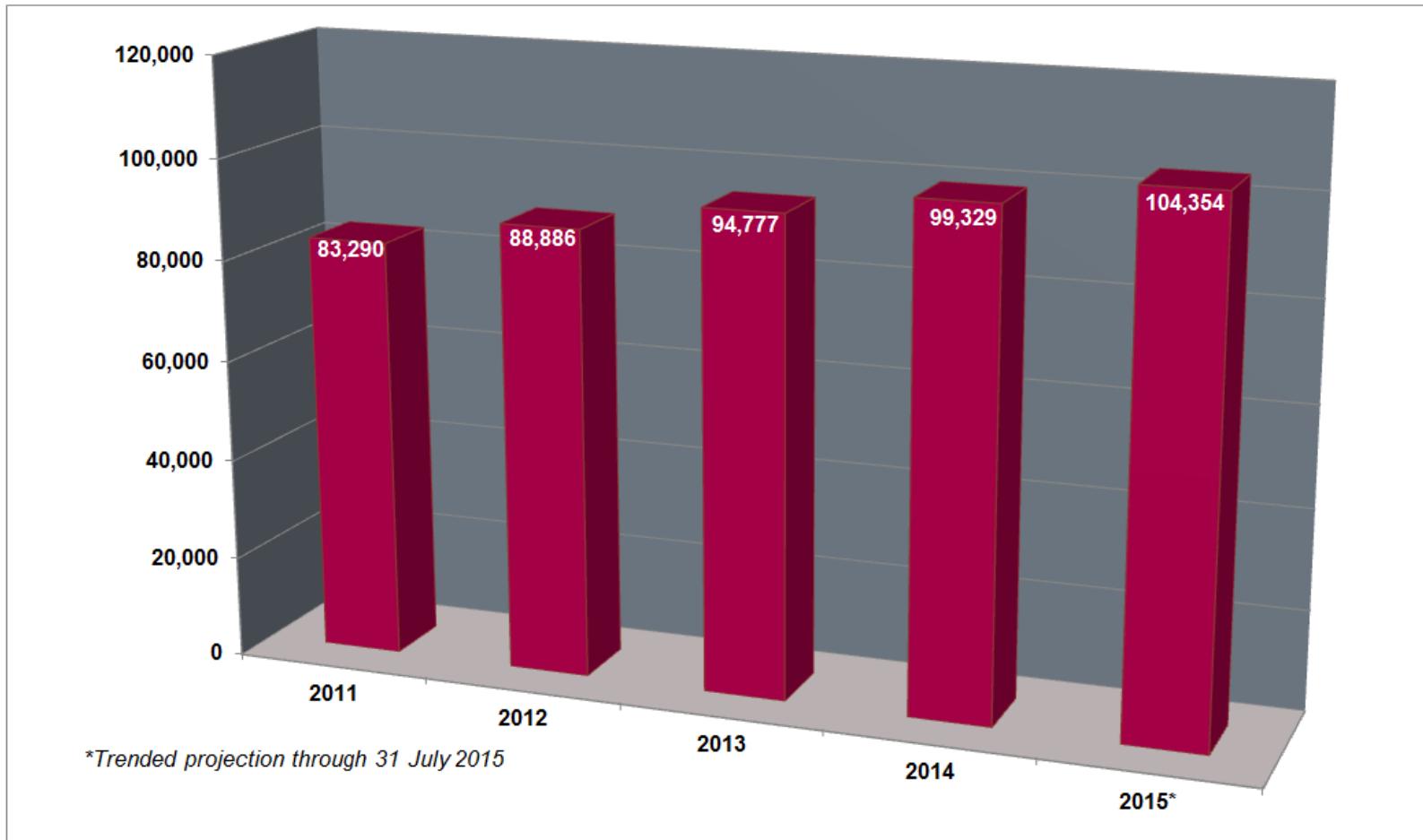
Established in 1969



**WE ARE ONE
ACCOUNTABLE
DEDICATED
AUTHENTIC
INNOVATIVE**



ISACA GROWTH



**208 CHAPTERS
WORLDWIDE**



**MEMBERS
LOCATED IN
185 COUNTRIES**



COBIT[®] 5

AN ISACA[®] FRAMEWORK



Nurture and continue to build COBIT training and usage globally and, where appropriate, leverage other valued frameworks

COBIT is the only business framework that helps organizations effectively govern and manage enterprise IT. Now in its 20th year, COBIT is used by enterprises and governments around the globe. COBIT 5, the most recent version, empowers organizations to improve performance by optimizing their information and technology. For more information, visit www.isaca.org/cobit-turns-20.

COBIT WORKS



say COBIT 5 has helped them address practical business issues beyond governance of enterprise IT (GEIT)



say COBIT 5 helped their enterprise integrate business and IT



of COBIT 5 users would recommend the framework to others

COBIT 5 IS NEEDED

Organizations' Most Frequent IT Problems Last Year:



+64%

say the current cyber threat landscape has caused their organization's leadership to more highly value the importance of GEIT

Top Benefits Enterprises Can Achieve With COBIT:

1 Integrating business and IT

2 Improving risk management

3 Improving cybersecurity

AUG
2015

GLOBAL DIGITAL STATISTICS



TOTAL
POPULATION



we
are
social

7.357
BILLION

URBANISATION: 53%

3.175
BILLION

PENETRATION: 43%

ACTIVE
INTERNET USERS



ACTIVE SOCIAL
MEDIA USERS



FIGURE REPRESENTS TOTAL GLOBAL
POPULATION, INCLUDING CHILDREN

FIGURE INCLUDES ACCESS VIA
FIXED AND MOBILE CONNECTIONS

FIGURE REPRESENTS ACTIVE USER
ACCOUNTS ON THE MOST ACTIVE
SOCIAL PLATFORM IN EACH
COUNTRY, NOT UNIQUE USERS

UNIQUE
MOBILE USERS



we
are
social

3.734
BILLION

PENETRATION: 51%

FIGURE REPRESENTS
UNIQUE MOBILE PHONE USERS

ACTIVE MOBILE
SOCIAL USERS



we
are
social

1.925
BILLION

PENETRATION: 26%

FIGURE REPRESENTS ACTIVE USER
ACCOUNTS ON THE MOST ACTIVE
SOCIAL PLATFORM IN EACH
COUNTRY, NOT UNIQUE USERS

AUG
2015

YEAR-ON-YEAR GROWTH

HOW THE DIGITAL WORLD HAS EVOLVED OVER THE PAST 12 MONTHS



TOTAL
POPULATION



we
are
social

ACTIVE
INTERNET USERS



ACTIVE SOCIAL
MEDIA USERS



UNIQUE
MOBILE USERS



ACTIVE MOBILE
SOCIAL USERS



2.5%

+177 MILLION

7.6%

+225 MILLION

8.7%

+176 MILLION

3.4%

+124 MILLION

23.3%

+365 MILLION

FIGURE REPRESENTS TOTAL GLOBAL
POPULATION, INCLUDING CHILDREN

FIGURE INCLUDES ACCESS VIA
FIXED AND MOBILE CONNECTIONS

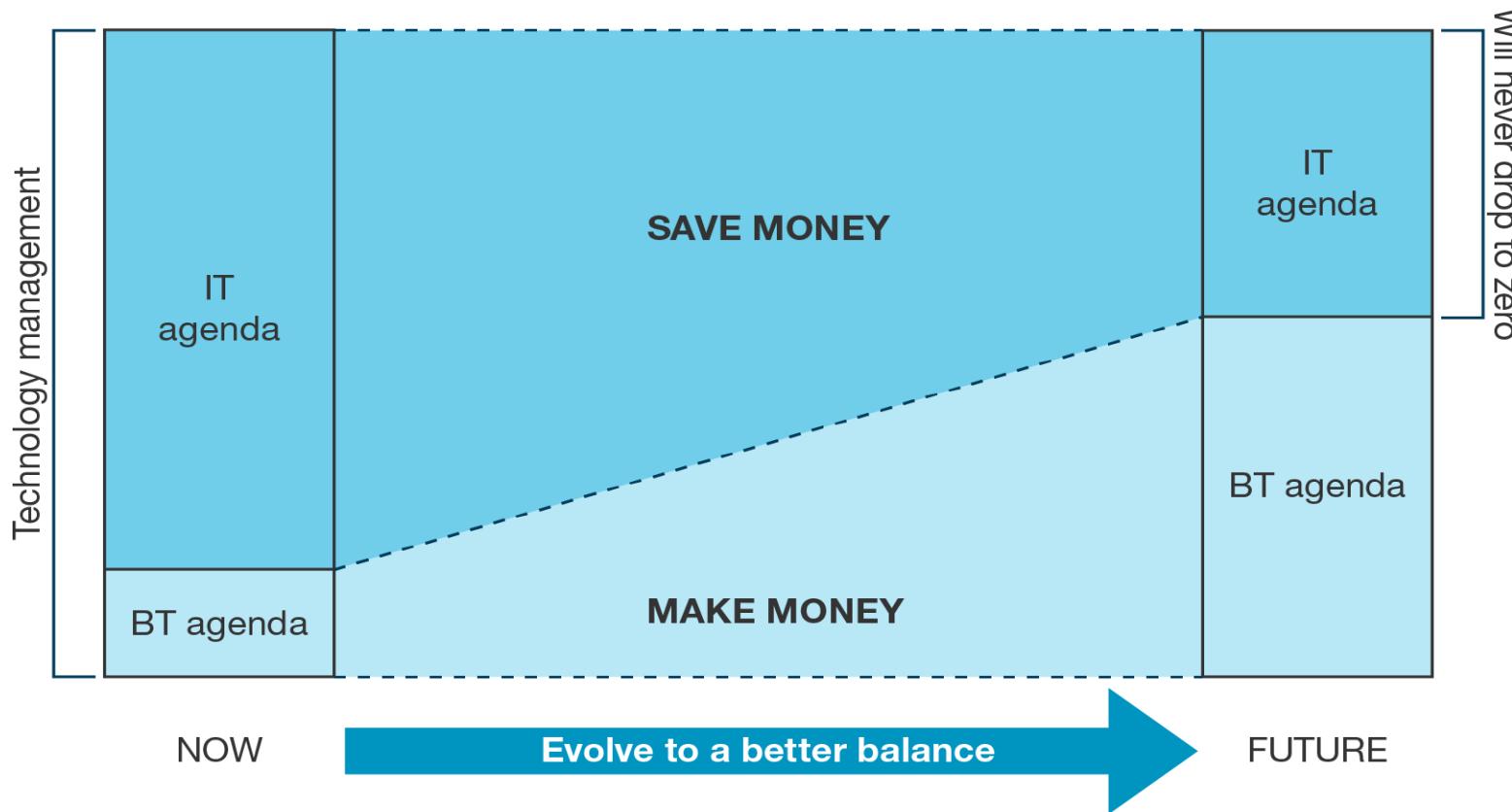
FIGURE REPRESENTS ACTIVE USER
ACCOUNTS ON THE MOST ACTIVE
SOCIAL PLATFORM IN EACH
COUNTRY, NOT UNIQUE USERS

FIGURE REPRESENTS
UNIQUE MOBILE PHONE USERS

FIGURE REPRESENTS ACTIVE USER
ACCOUNTS ON THE MOST ACTIVE
SOCIAL PLATFORM IN EACH
COUNTRY, NOT UNIQUE USERS

Rebalance Your Technology Investments To Focus More On The BT Agenda

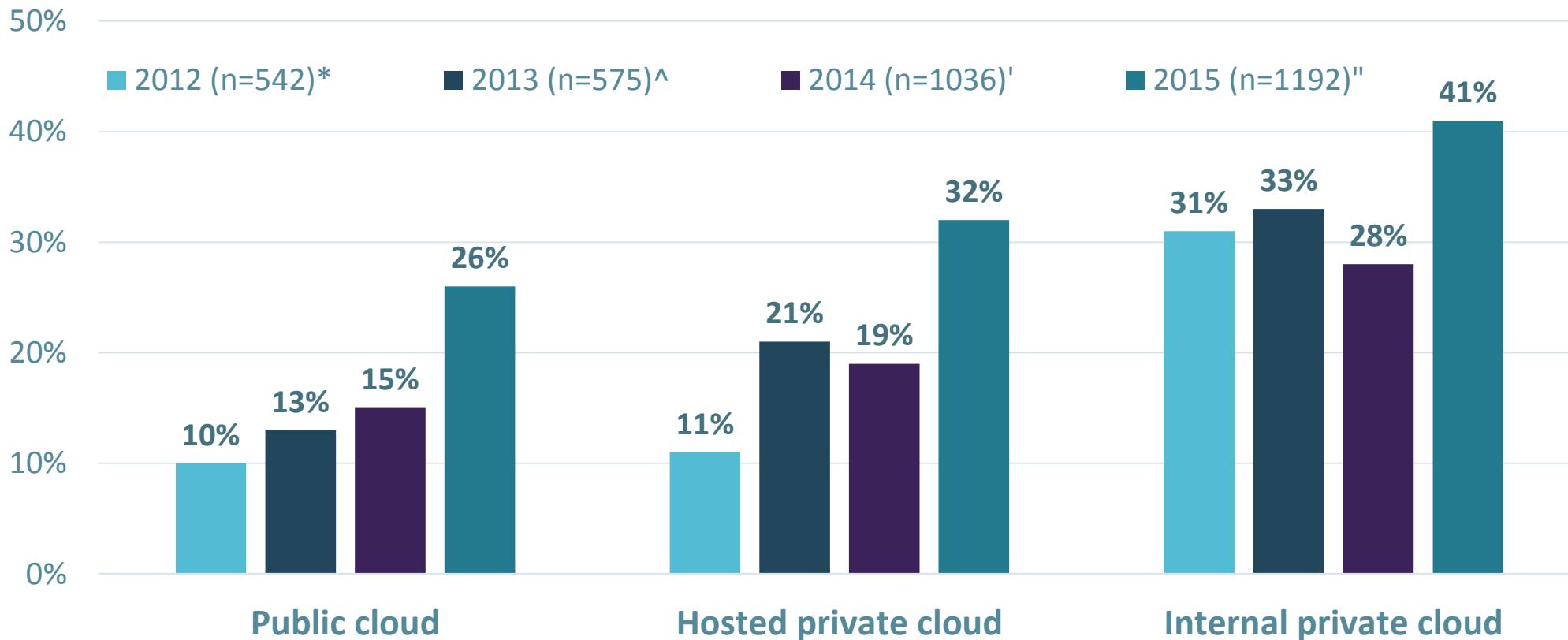
Cloud Services Are Transforming Your Industry – Act Now To Thrive



The background of the image is a wide-angle photograph of a desert landscape. It features large, layered red rock formations on the left and right sides. The ground is covered in patches of dry, yellowish-green vegetation and light-colored sand. Above the rocks, the sky is a clear, vibrant blue, dotted with several large, fluffy white clouds.

Cloud enables the digital business

“WHAT ARE YOUR FIRM’S PLANS TO ADOPT THE FOLLOWING CLOUD PLATFORM DEPLOYMENT MODELS?” (IMPLEMENTED OR EXPANDING IMPLEMENTATION)

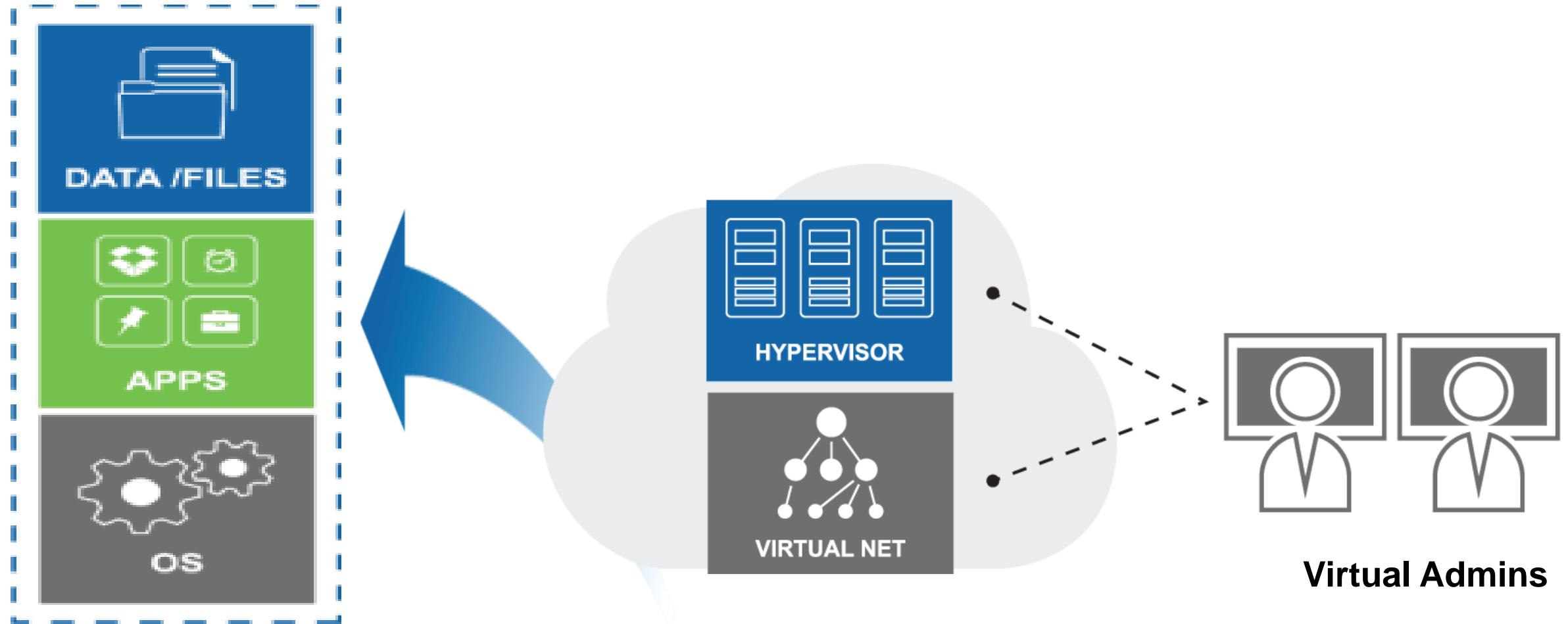


Base: hardware decision-makers at **North American and European** enterprises (1000+ employees)

Source*: Forrester's Forrsights Hardware Survey, Q3 2012 Source^: Forrester's Forrsights Hardware Survey, Q3 2013

Source': Forrester's Business Technographics Global Infrastructure Survey, 2014 Source": Forrester's Business Technographics Global Infrastructure Survey, 2015

SOFTWARE DEFINED DATACENTER (SDDC)

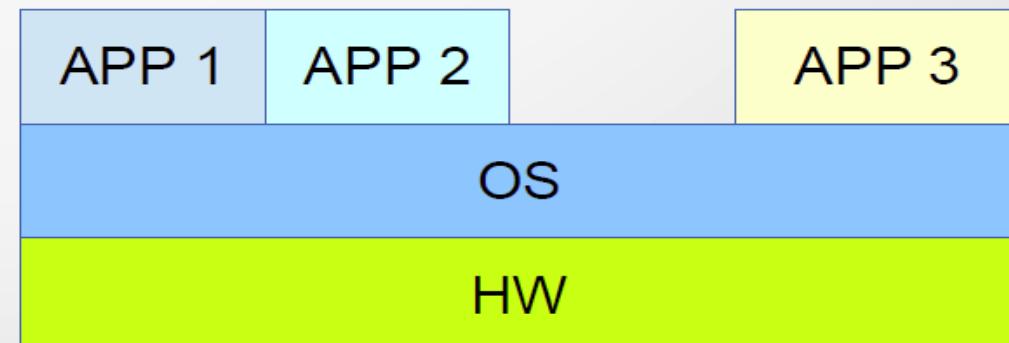
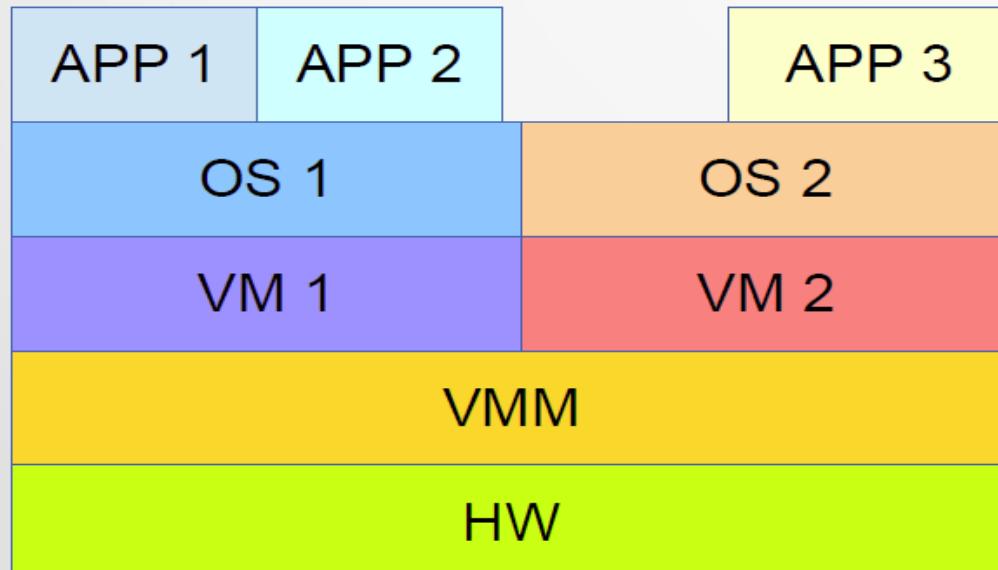


CONTAINERIZATION



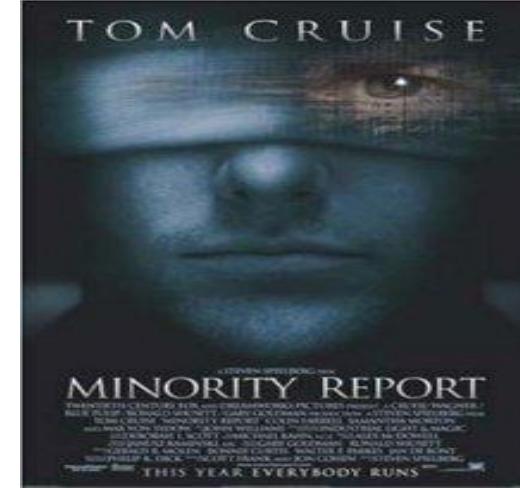
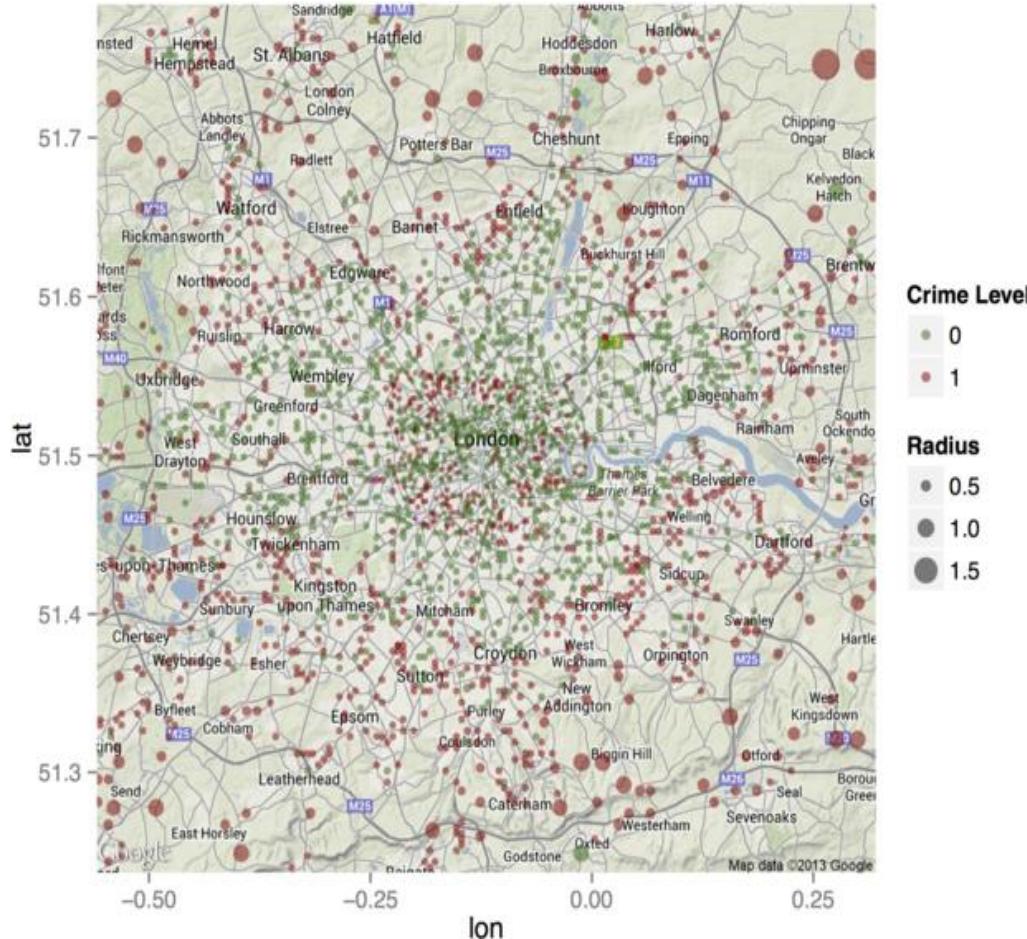
CONTAINERS AND VIRTUAL MACHINES

Hypervisor	Container-enabled kernel
Runs operating systems	Runs processes
Heavyweight isolated virtual machines	Lightweight kernel namespaces
Can theoretically emulate any architecture	Is less flexible in architecture emulation
VMs start via a full boot-up process	Very fast namespace + process creation
Platform-oriented solution	Service-oriented solution
Optimized for generality	Optimized for minimalism and speed



ANALYTICS

Crime Hot Spots in London

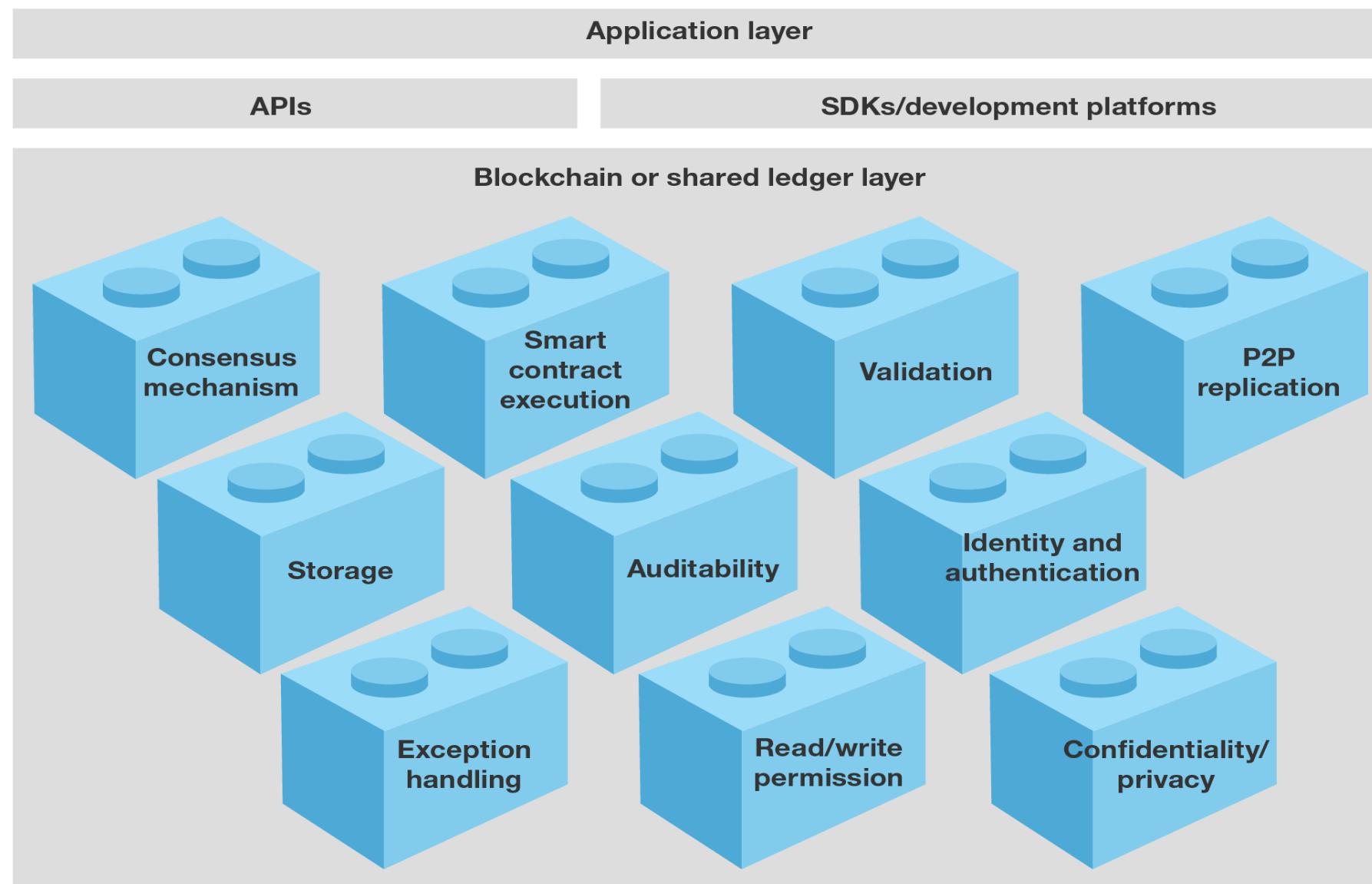


What about predicting crime by particular individuals? Will we have predictive capabilities like those in the movie Minority Report, but through Big Data?

Source: NetworkWorld, Sep 20, 2014

Paper titled [Once Upon a Crime: Towards Crime Prediction from Demographics and Mobile Data](#) by Andrey Bogomolov, Bruno Lepri, Jacopo Staiano, Nuria Oliver, Fabio Pianesi, and Alex Pentland discusses the use of mobile phone data and demographic data to predict crime geographically:

THERE'S NO SUCH THING AS “THE BLOCKCHAIN”



A FEW KEY PRINCIPLES

A blockchain is an append-only, cryptographically secured, distributed, and replicated store of records.

- “Cryptographically secured” doesn’t mean the transaction data is encrypted.
- “Store of records” doesn’t mean that all data associated with a transaction is stored on the chain.

A blockchain can be described as a distributed ledger — but a distributed ledger doesn’t have to be a blockchain.

KEY DEVELOPMENTS IN THE PAST SIX MONTHS

› R3CEV: member-funded consortium

- Adopt, adapt, and build approach.

› Microsoft: “Blockchain as a service”

- Hosting blockchain offerings on Azure (dev and test)

› Linux Foundation Hyperledger Project

- Develop an open source framework and code base.

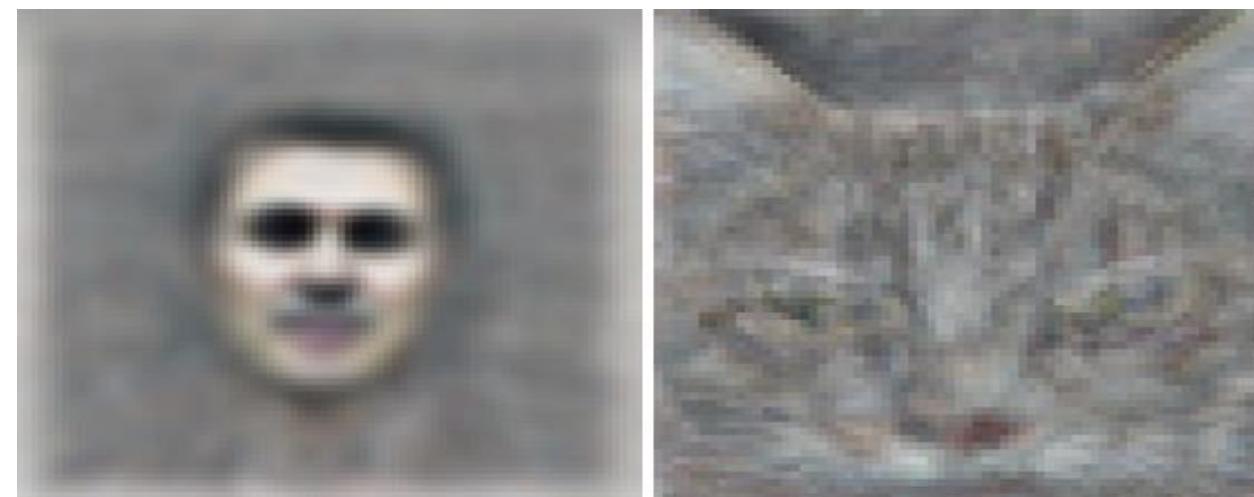
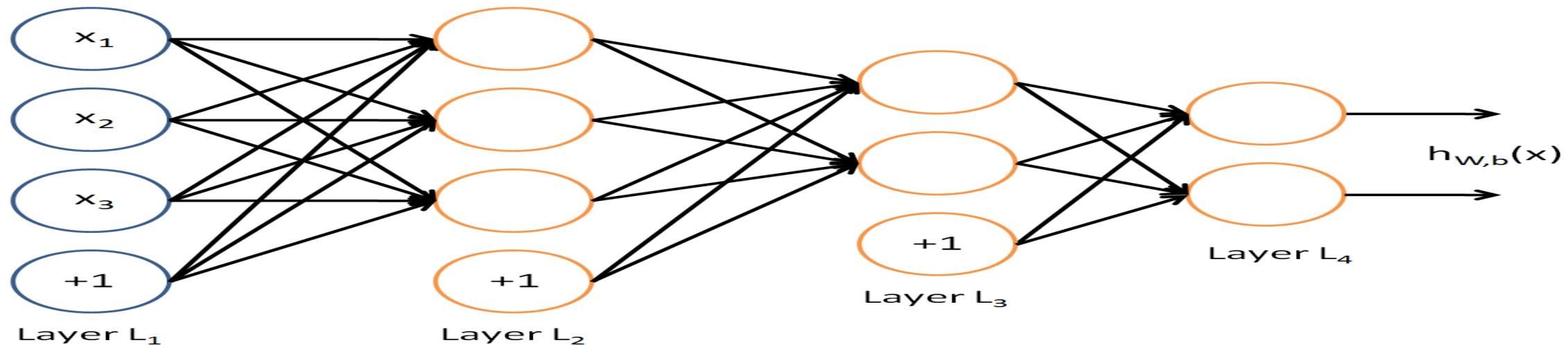
› IBM: long-standing blockchain involvement

- Hyperledger, Blockchain DevOps, and internal

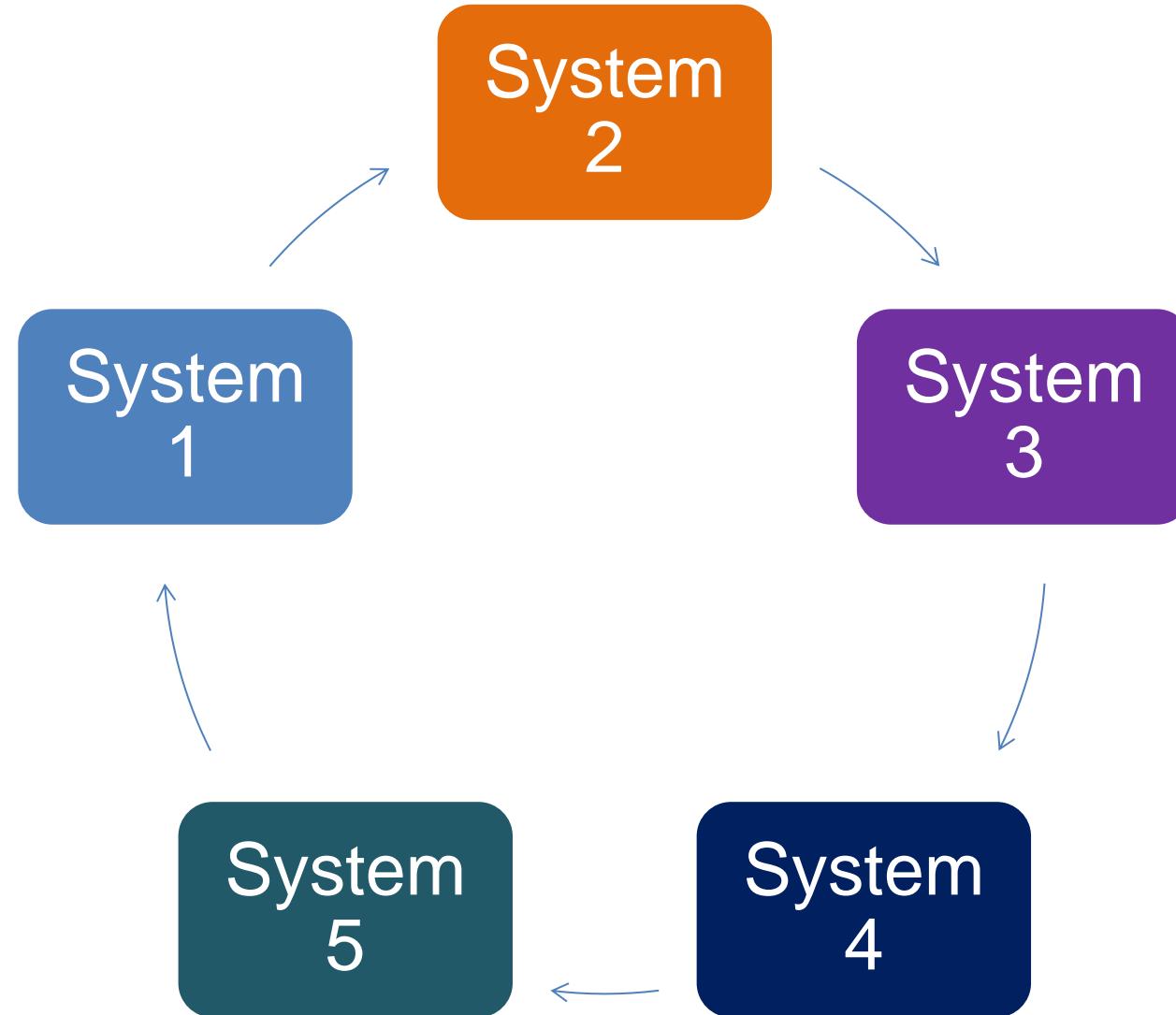
› Consulting firms and SIs increasingly active

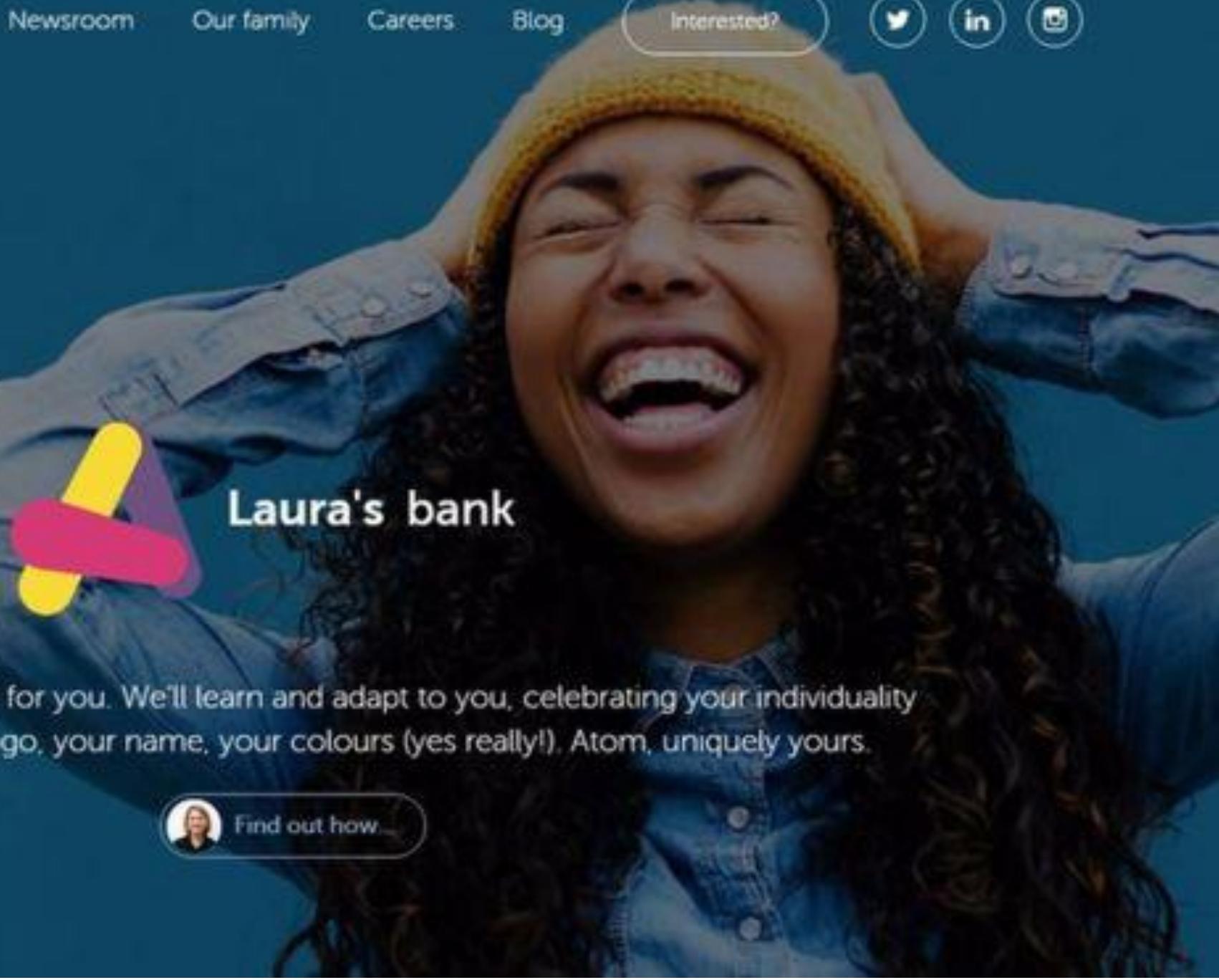
- 3Pillar Global, Capgemini, Cognizant, Deloitte, EY, KPMG, PwC, and Virtusa

TODAY CAPABLE OF LEARNING LIKE A 3,4 YEAR OLD CHILD. IN TEN YEARS....?



SOFTWARE ROBOTS AND COGNITIVE SYSTEMS REPLACE HUMAN LABOR





Laura's bank

We're building this bank for you. We'll learn and adapt to you, celebrating your individuality in every way. Your logo, your name, your colours (yes really!). Atom, uniquely yours.



Find out how...

ATOM CHALLENGING TRADITIONAL THINKING

Atom #08



"I think we have the potential to be as disruptive (as Uber). Absolutely. Why not?"
- Mark Mullen, CEO

Company Description

Atom Bank is a new digital banking system, authorised by the Prudential Regulation Authority (PRA) and regulated by the Financial Conduct Authority (FCA). They offer an app-based experience, using leading technology. The digital world is constantly changing and Atom will be changing banking too. Atom Bank is based in the UK and doesn't have any branches, instead you can do all your banking on your phone, 24/7. Their aim is to breathe new life into banking.

Staff



Size



Enabler or Disruptor



User Engagement



At a Glance

Tag Line

We think it's time someone breathed new life into banking

Located

Durham, United Kingdom

Year Founded

2014

Key People

Mark Mullen, CEO

David McCarthy, CFO

Website

<https://www.atombank.co.uk>

Specialisation

Retail banking

Ownership

Private

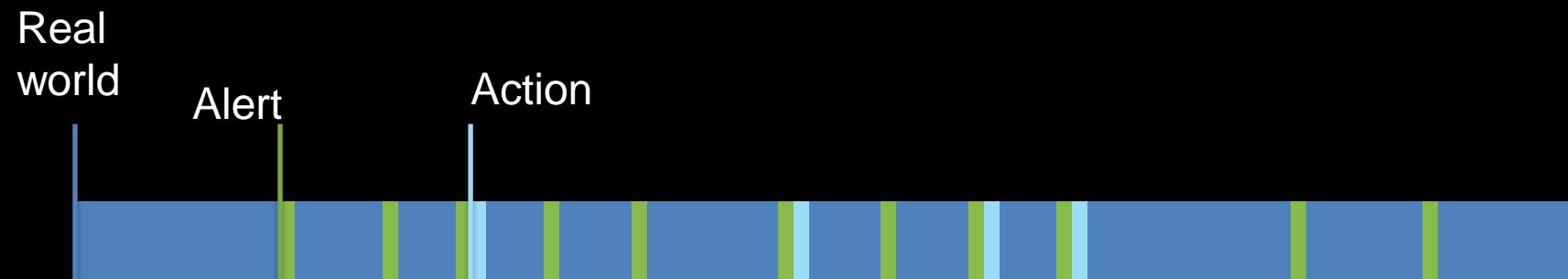
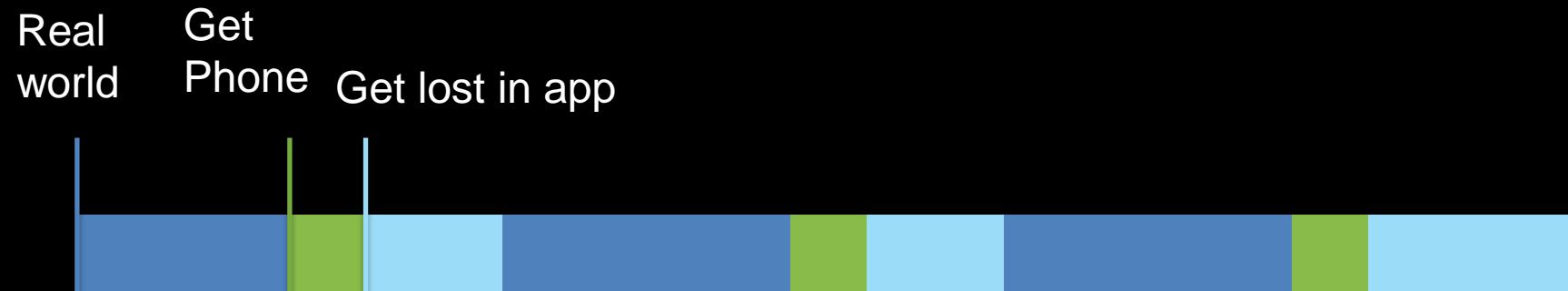
**Design your Banking solution
(client is invested)**

Digital Native aware

Rapid iteration – so the market transitions so does the solution

Breaking traditional barriers

FROM MOBILE MOMENTS..... TO MICRO MOMENTS



Driving Aids



Forward



Lane



Blind Spot



AUTOTUBE



0:11 / 1:52







#happytohelp

#happytohelp

We are KLM customers. We are happy to help our customers 24/7.

Whethership is a free, round-the-clock customer service team set out to help every traveller

in need around the world. Whether they fly KLM or not.



MARKS & SPENCER

προσφορά
50%



προσφορά
έως
50%
από τις μέντα σιών



9€

Angel

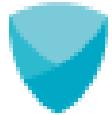
GIF



"If you went to bed last night as an industrial company, you're going to wake up today as a software and analytics company,"

Jeff Immelt, CEO General Electric





SureNow

Einfach. Sofort. Versichert.



Merrifield
GARDEN CENTER

ISACA
Trust in, and value from, information systems

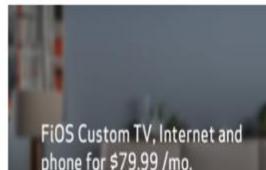
NETWORK OUTAGES LIKE NYSE, UNITED AIRLINES, ARE THE NEW NATURAL DISASTERS

THE UPS AND DOWNS OF NETWORK INFRASTRUCTURE ARE A GROWING PROBLEM WITHOUT A SOLUTION

By G. Clay Whittaker Posted July 10, 2015



Sponsored



FiOS Custom TV, Internet and phone for \$79.99 /mo.

NETWORK OUTAGES LIKE NYSE, UNITED AIRLINES, ARE THE NEW NATURAL DISASTERS

United Airlines 787 lands at the O'Hare International Airport in Chicago

Piper/UnfinishedPortraitmaker/Flickr/CC-BY-2.0

This week saw two nearly simultaneous infrastructure failures in major industries: finance and transportation.

On Wednesday, July 8th, the New York Stock Exchange abruptly went down for a big chunk of the trading day. Suspicions of a cyber attack erupted almost immediately after the exchange went dark, but the NYSE denied this, and later clarified that the problem had resulted from [gateway software compatibility](#).

The same day [United Airlines experienced a network crash](#) due to what they say was a [faulty router connection](#) that degraded network connectivity. After 59 cancelled flights, the network was [mostly back online](#).

Both were back online within a matter of hours, and while some damage was done the majority of people went on about their lives without problem. But the frequency of these episodes is increasing as networks become more complicated and as we rely more on them for day-to-day life.

SAFE HARBOR IDENTIFIED PRIVACY

Safe Harbor ruling opened the issue of data sovereignty

EU Privacy shield will shortly be in place

Laws by country mandate a rethink of where workloads run and where data resides

Safe Harbor Ruling Leaves Companies with Imperfect Alternatives

ARTICLE

COMMENTS

EU PRIVACY SAFE HARBOR U.S.

Email

Print

f 5

Twitter

By STEPHEN DOCKERY

CONNECT



A man walks by the European Court of Justice in Luxembourg. —Associated Press

The European Court of Justice pulled the rug out from under thousands of companies' data-sharing plans when it invalidated the expansive Safe Harbor agreement governing transfers between the U.S. and EU.

Source: <http://blogs.wsj.com/riskandcompliance/2015/12/08/safe-harbor-ruling-leaves-companies-with-imperfect-alternatives/>

EU PRIVACY SHIELD SOON TO BE FINALIZED - MAYBE



Věra Jourová 
@VeraJourova

 Follow

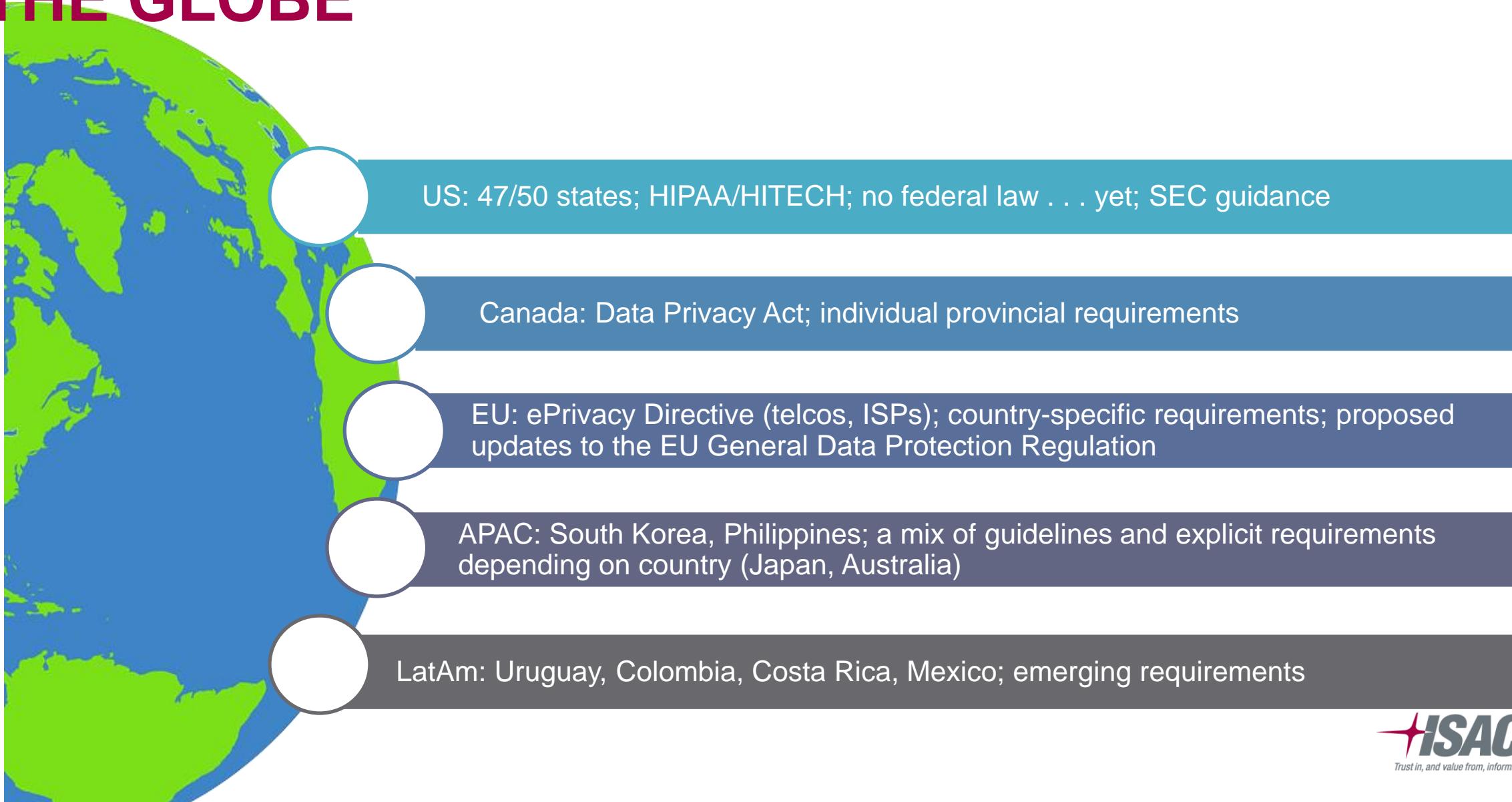
We're now finalising texts and will unveil the #Privacy Shield 2nd half of February @Ansip_EU

10:48 PM - 7 Feb 2016

← 167  167  59

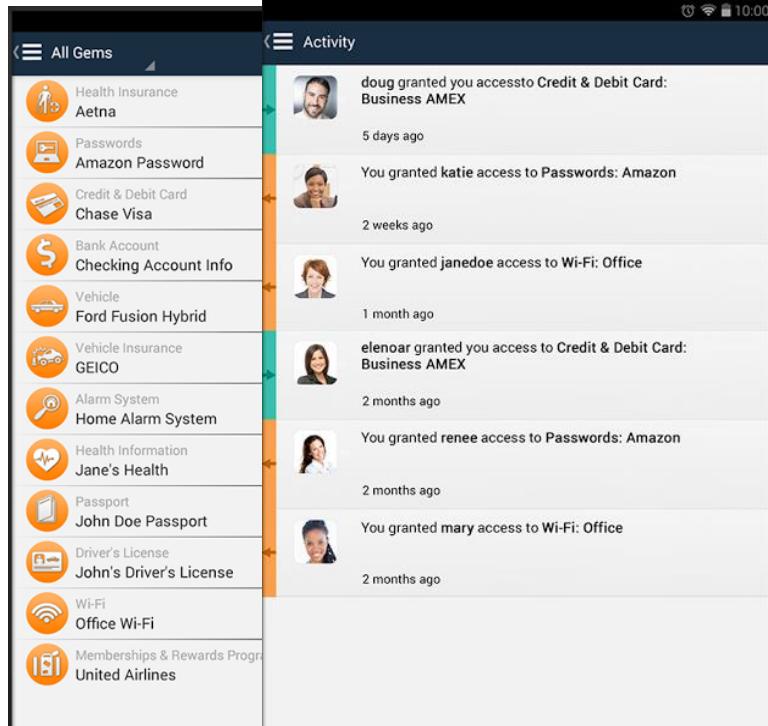


SAMPLING OF BREACH NOTIFICATION ACROSS THE GLOBE

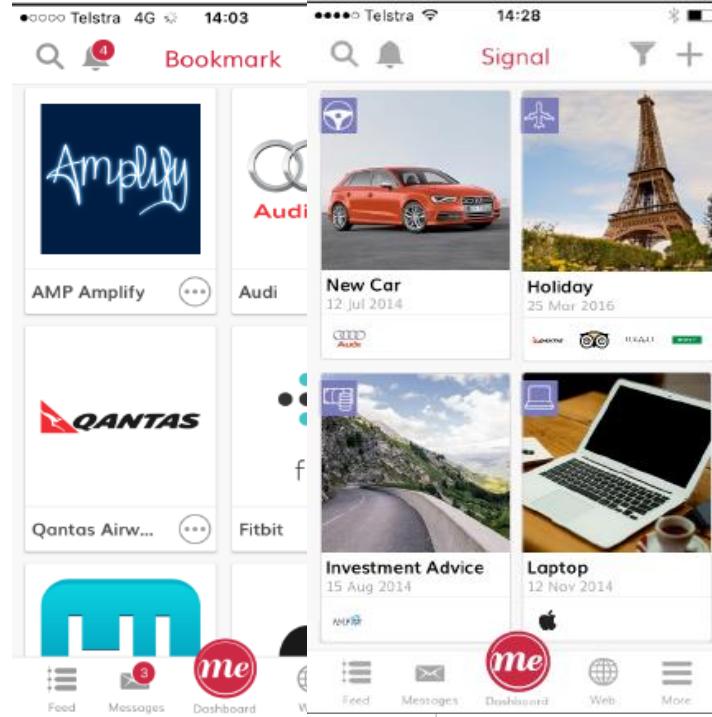




PERSONAL IDENTITY & DATA MANAGEMENT WILL CHANGE BUSINESS

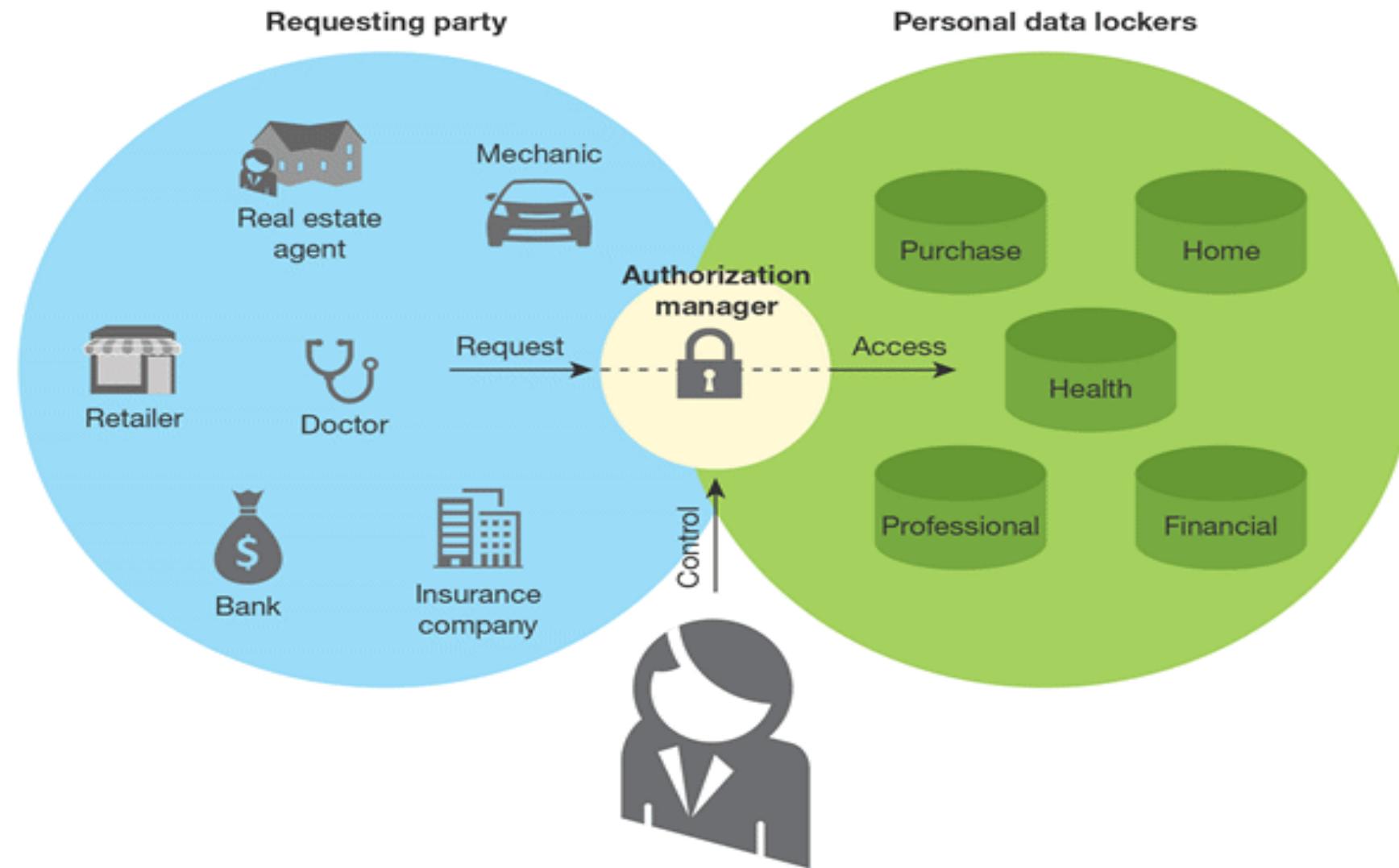


Personal.com is a data locker (personal & enterprise) that enables sharing between users



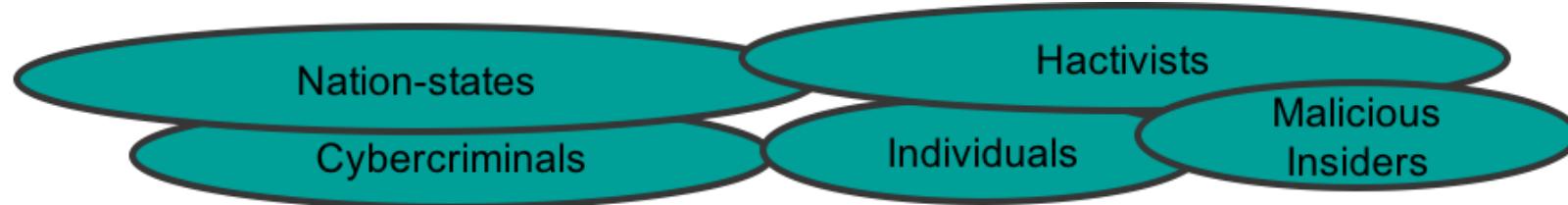
Meeco lets users create their “private web” by browsing inside the app. Then, they can “signal” to participating brands about their interests and intentions.

ENTER: PERSONAL IDENTITY & DATA MANAGEMENT



CYBER THREAT LANDSCAPE, TRENDS AND IMPACT

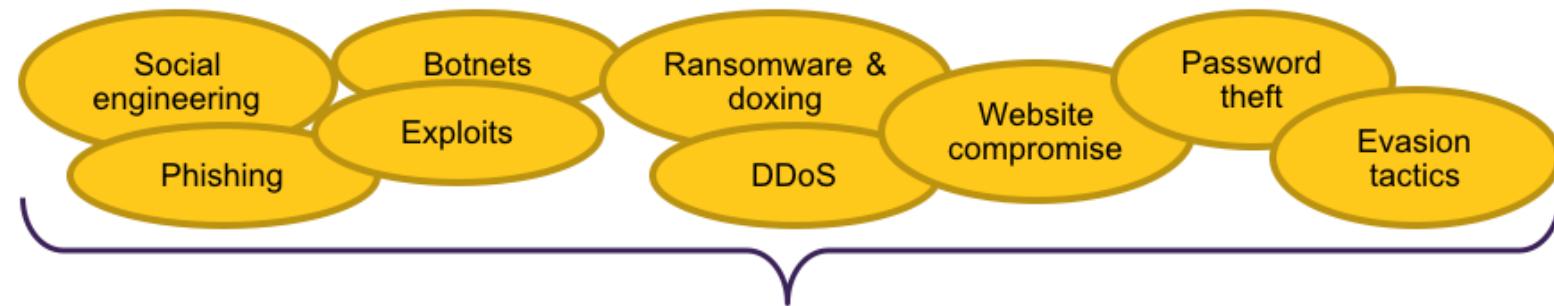
Threat actors



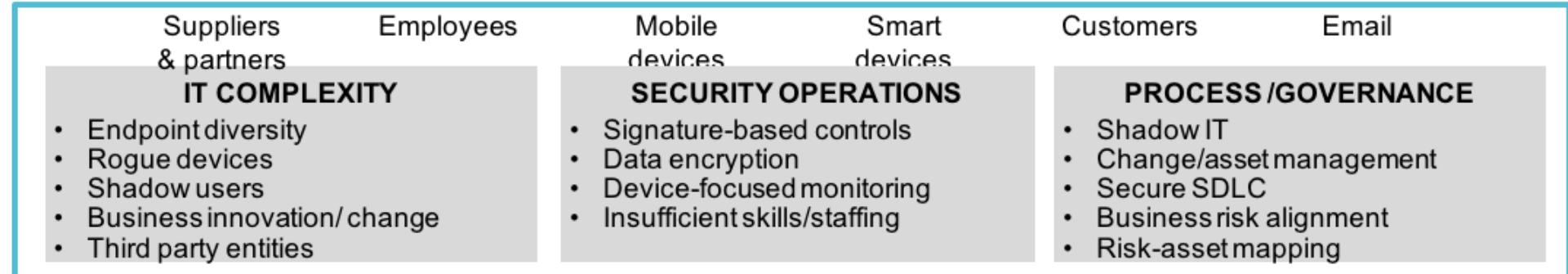
Actor ecosystem



Tool, tactics, and procedures



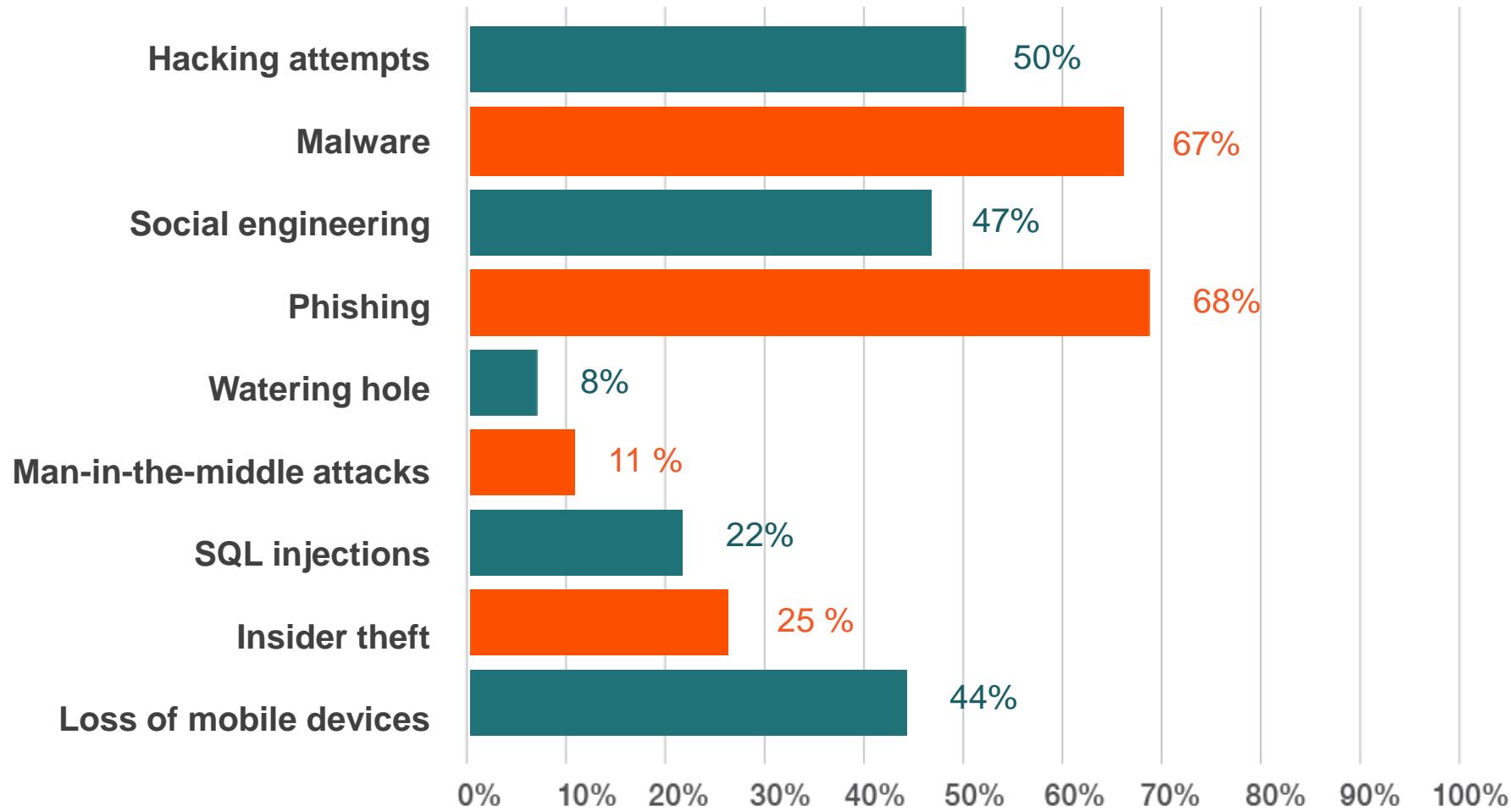
Threat vectors



Potential impact

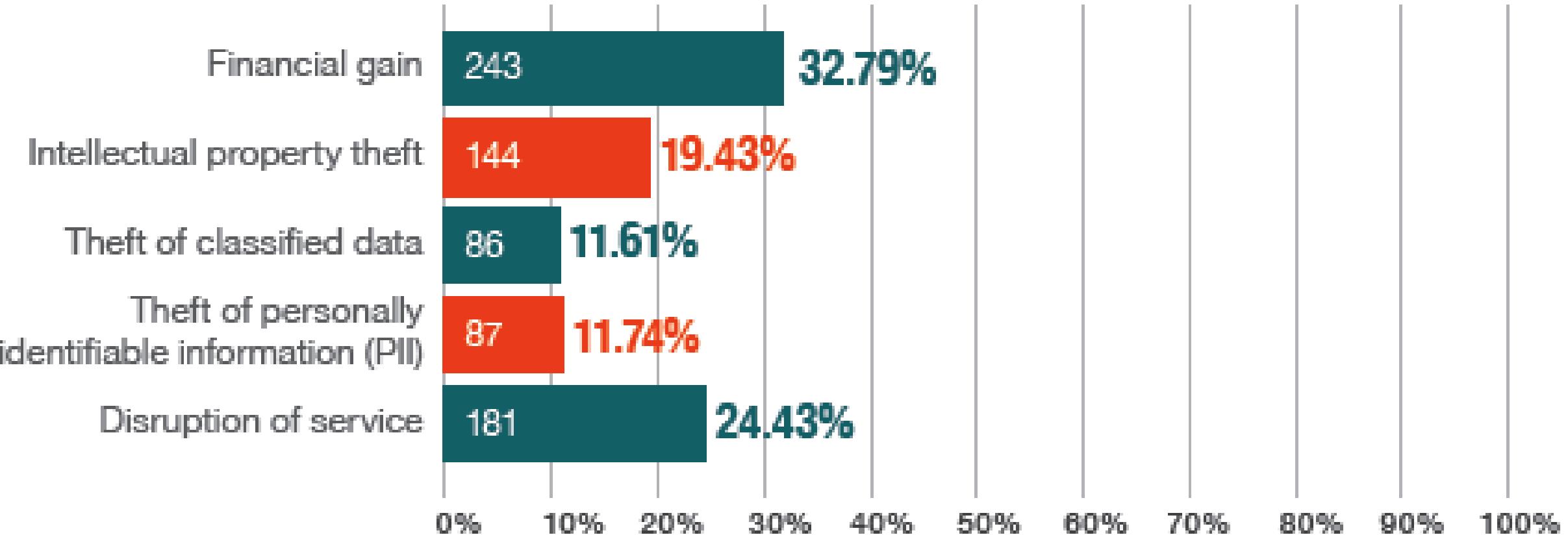


THREAT PROFILE



Source: ISACA \ RSA Survey

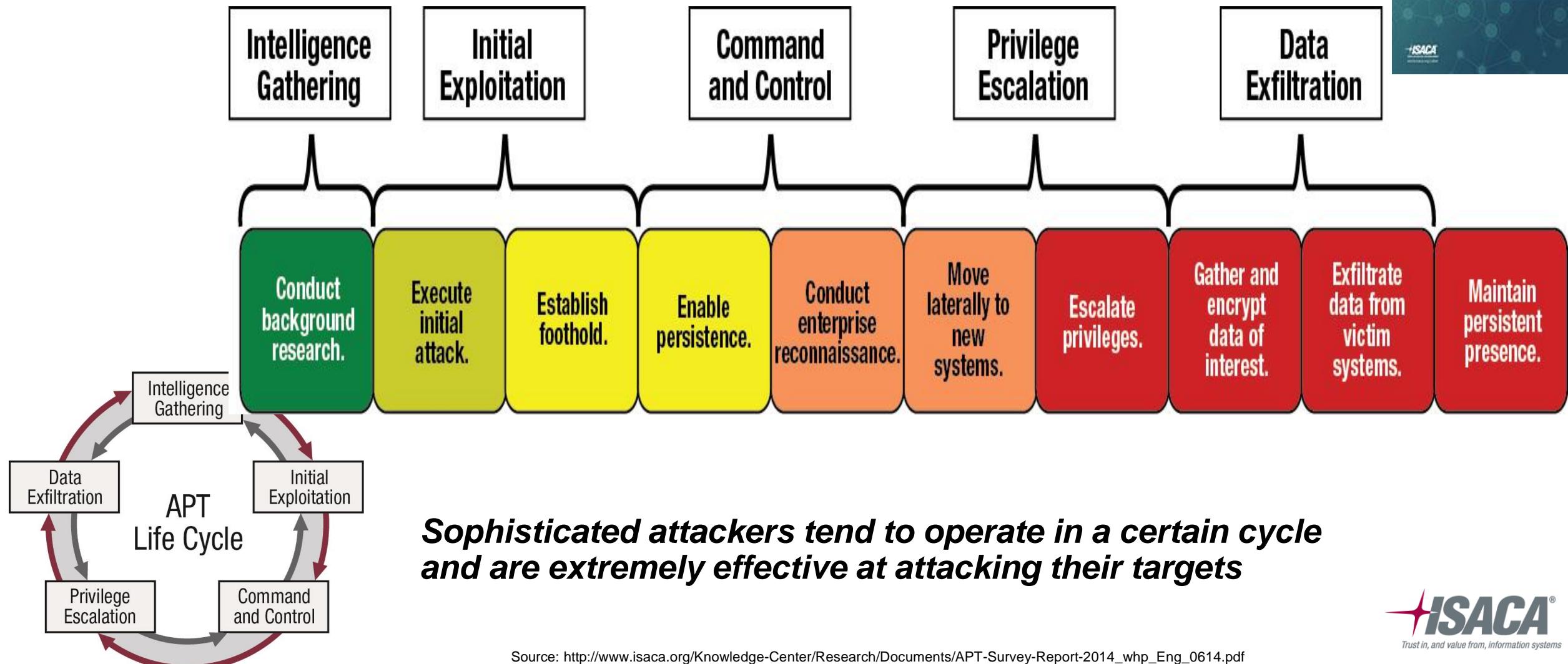
\$



Total Respondents: 741

Source: ISACA \ RSA Survey

ADVANCED PERSISTENT THREAT (APT) LIFECYCLE



RAMSOMWARE



BITCOIN RANSOMWARE HITS SHERIFF'S OFFICE

• Giulio Prisco • News, World Security • 15 Comments

109
SHARES



Dickson County Sheriff's Office said they had to pay a ransom - \$500 in Bitcoin - to regain access to thousands of their case files which has been encrypted by a computer virus, [News Channel 5 Network](#) reports.

IT Director Detective Jeff McCliss said:

"Every sort of document that you could develop in an investigation was in that folder. There was a total of 72,000 files."



END OF PRIVACY?



"On the Internet, nobody knows you're a dog."



*"Remember when, on the Internet,
nobody knew who you were?"*

PRIVACY

Traditional
Personally
Identifying
Information

Name

Address

Date of Birth

SSN/Govt. and \ or
ID Number

Username

New Internet of Things
Personal Data
*What? Where?
When? Why?*

GPS Location

Heart rate

Glucose level

Weight

Calories

Exercise route

Sleep

Mood

Surrounding
Images

Driving habits

Travel route



The Hidden Internet of Things at Work: RISKS AND REWARDS

1 in 2

Believe IT department is not aware of all the organization's connected devices

72%

Believe that Internet of Things device manufacturers do not implement sufficient security

#1

IoT security concern for enterprises is data leakage

63%

Say workplace use of Internet of Things devices has reduced employee privacy

47%

Expect a cyberattack on their organization within the next year

73%

Estimate medium to high likelihood of organization being hacked through Internet of Things device

#1

Benefit of Internet of Things is better access to information

1 in 3

Believe their organization is unprepared for a sophisticated cyberattack



The Internet of Things will continue to surround and connect people at home, at work and on the road.

The number of B2B Internet of Things devices is expected to expand from 1.2 billion devices in 2015 to 5.4 billion connected devices by 2020 (Verizon/ABI Research). To view IT and cybersecurity professionals' recommendations for maintaining a cyber-secure workplace and learn the steps that consumers can take to protect their data, visit:

www.isaca.org/Risk-reward-barometer

Source: <http://www.isaca.org/SiteCollectionImages/Risk-Reward/2015/CSX-infographic-member-global-large.jpg>

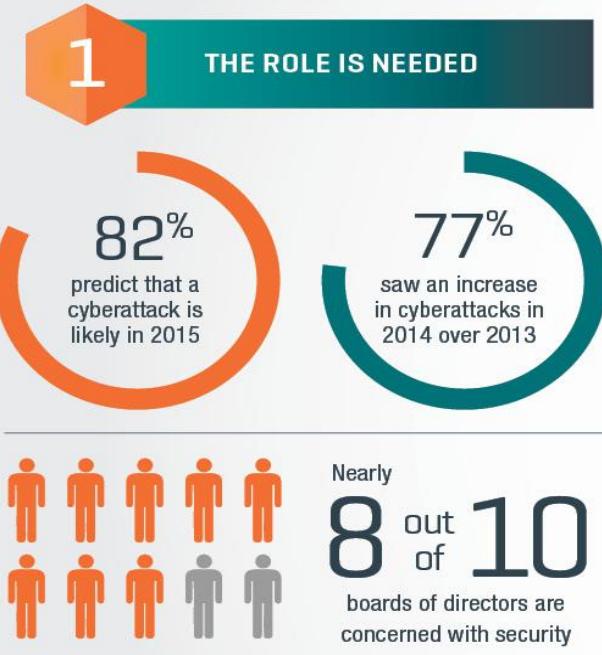
Source: ISACA 2015 IT Risk/Reward Barometer, global member survey

MONETIZATION OF CYBER CRIME

Item	Cost on black market
1,000 Stolen Email Addresses	\$0.50 to \$10
Credit Card Details	\$0.50 to \$20
Scans of Real Passports	\$1 to \$2
Stolen Gaming Accounts	\$10 to \$15
Custom Malware	\$12 to \$3500
1,000 Social Network Followers	\$2 to \$12
Stolen Cloud Accounts	\$7 to \$8
1 Million Verified Email Spam Mail-outs	\$70 to \$150
Registered and Activated Russian Mobile Phone SIM Card	\$100

Global Cybersecurity Skill Shortage + Increased Budgets = Career Opportunities

According to the State of Cybersecurity: Implications for 2015 report, cybersecurity now has executive support and increased budgets. Yet, there is still a shortage of skilled professionals. The solution includes hands-on training and trusted credentialing.



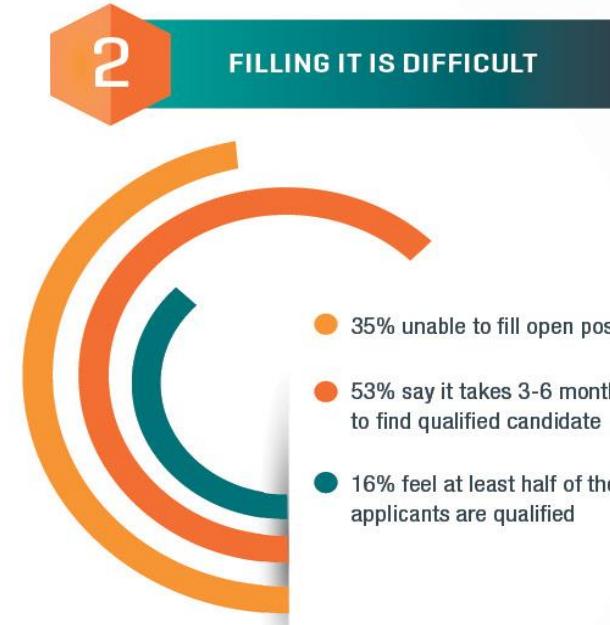
The most frequently successful cyberattacks:

- 1 Phishing
- 2 Malware
- 3 Hacking Attempts



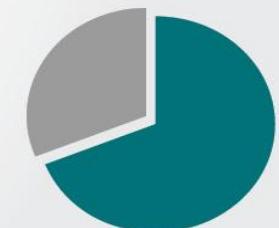
of enterprises provide employees with mobile devices

91% of lost physical assets are mobile devices



LESS THAN HALF

feel their security teams are able to detect and respond to complex incidents



SOURCE: State of Cybersecurity: Implications for 2015, an ISACA and RSA Conference Survey
www.isaca.org/state-of-cybersecurity-2015

© 2015 ISACA. All rights reserved.

RSA®Conference

Where the world talks security

CSX™
CYBERSECURITY NEXUS

ISACA®
Trust in, and value from, information systems

www.isaca.org/state-of-cybersecurity-2015

CALL TO ACTION



www.isaca.org/cyber

- Every business today is a software business
- Rate and pace of technology will only increase
- Skills gap increasing
- Embrace new technology . . .
- ISACA – effective controls and assurance are critical in this Digital Age!

Thank you

Robert E Stroud CGEIT CRISC

RStroud@forrester.com



@RobertEStroud



FORRESTER®

forrester.com