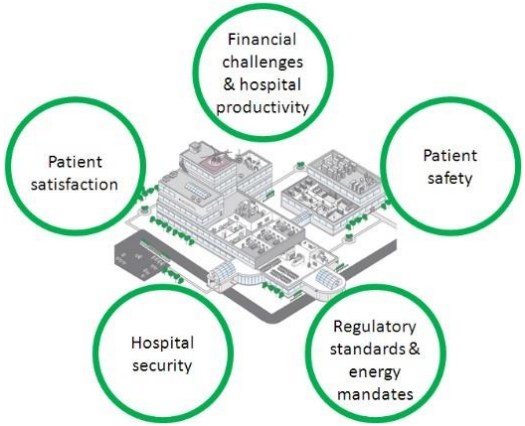
McAfee
Together is power.

Evidence Based Security

Reality.. Or… Fantasy

Sumit Sehgal | Chief Healthcare Technical Strategist

What makes healthcare information security different?

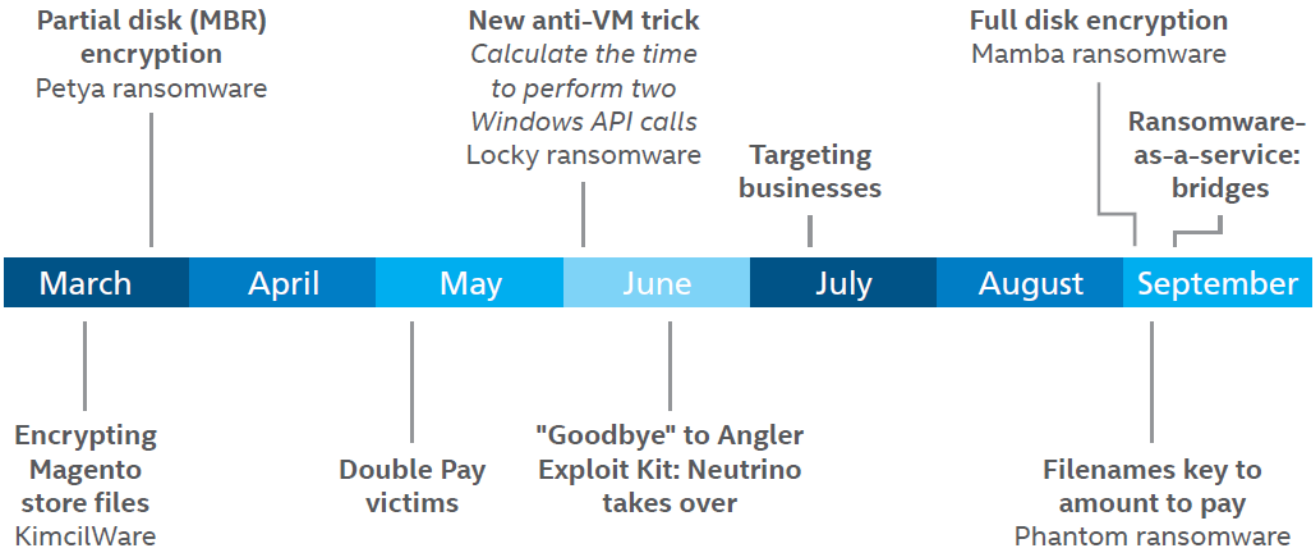


Goal is to achieve emotional and physical well being while managing complexity of large scale “always ON” environments.

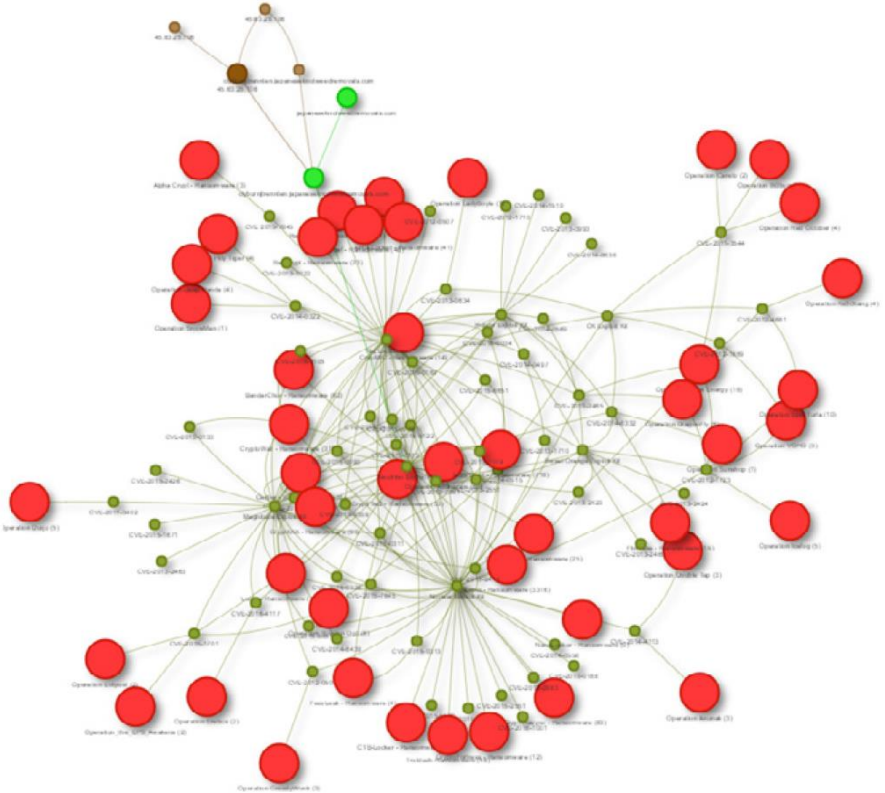
What’s coming after us?

The threats are real…

And their evolution is as well..

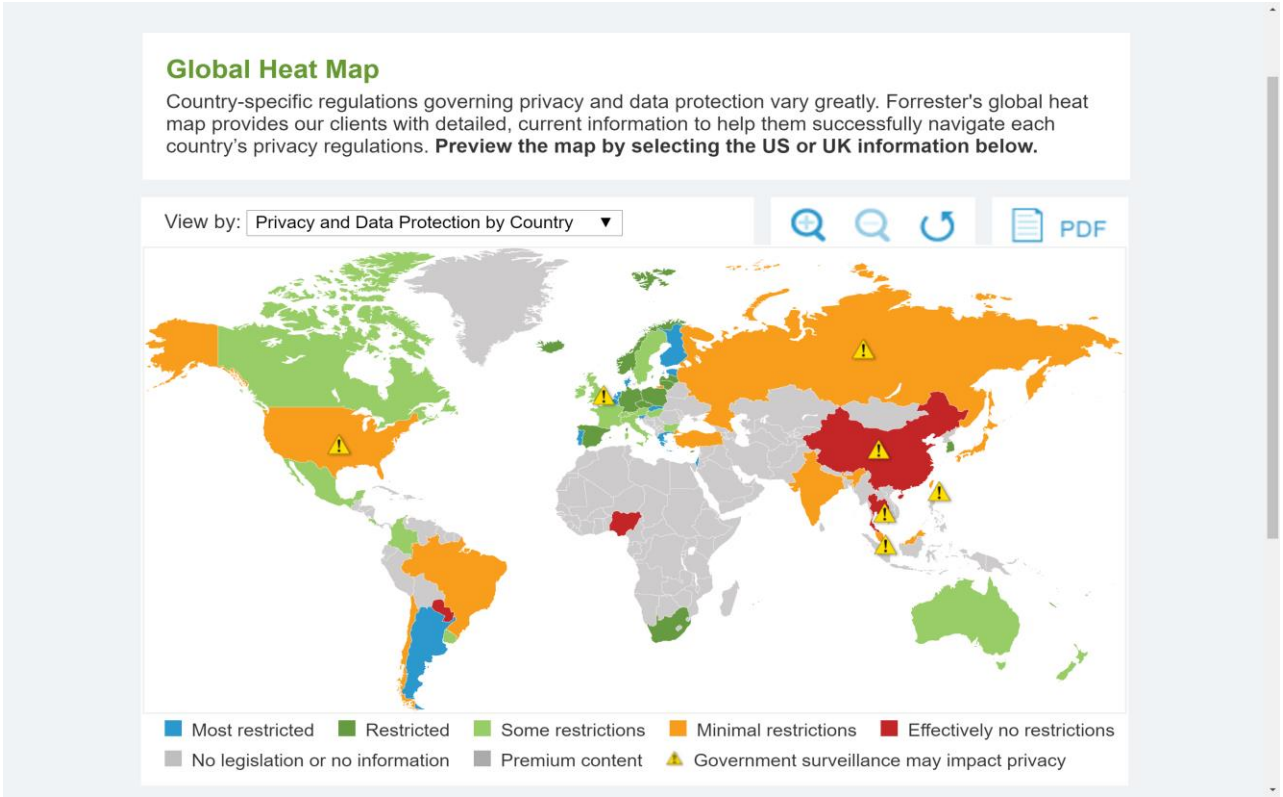


Source: McAfee Labs.



Source: McAfee Labs.

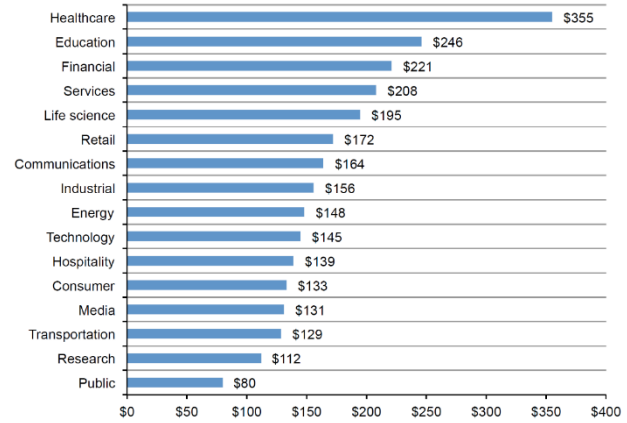
Data Telemetry is important especially if working internationally…



Source: Forrester's Global Data Protection and Privacy Heatmap

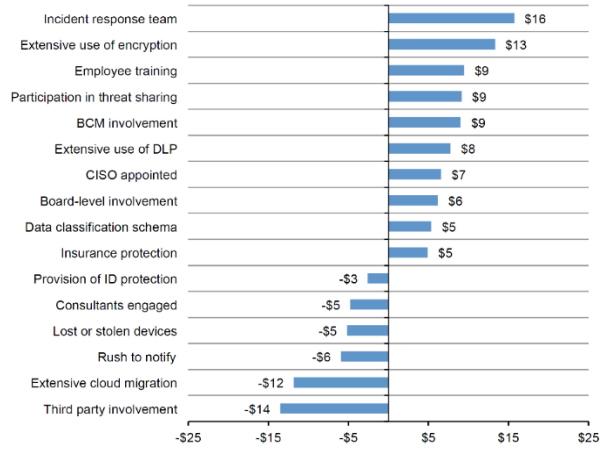
Its just not about the value of data… it's also about how you affect it…..

Figure 4. Per capita cost by industry classification
Consolidated view (n=383), measured in US$



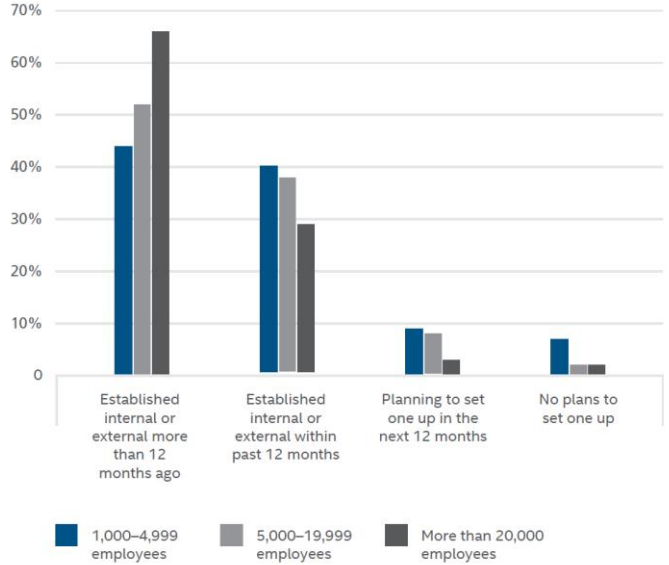
Can you guess what is worth ~**$1100**/Record?

Figure 8. Impact of 16 factors on the per capita cost of data breach
Consolidated view (n=383), measured in US$



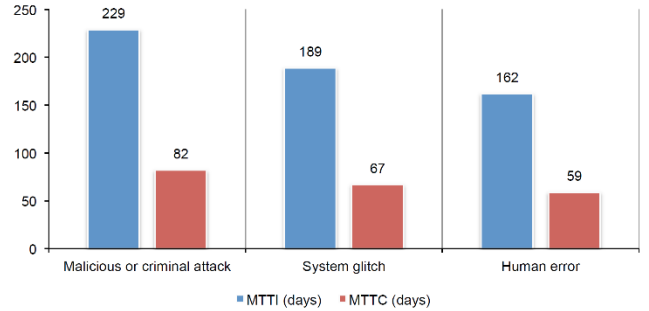
Source: Ponemon Reports 2016

So if everyone is looking at threats….



Why is the response downright…. depressing??

Figure 21. Mean time to identify and contain data breach incidents by root cause (in days)
Consolidated view (n = 383)



Source: McAfee Labs & Ponemon Reports 2016

To maximize our focus…We need to improve threat defense efficacy

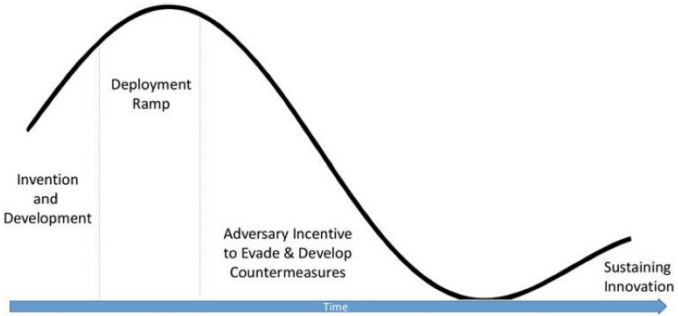


Figure 8-1. *Grobman's Curve of Threat Defense Effectiveness*

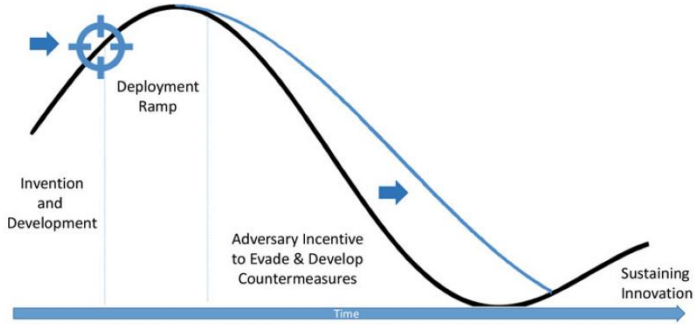
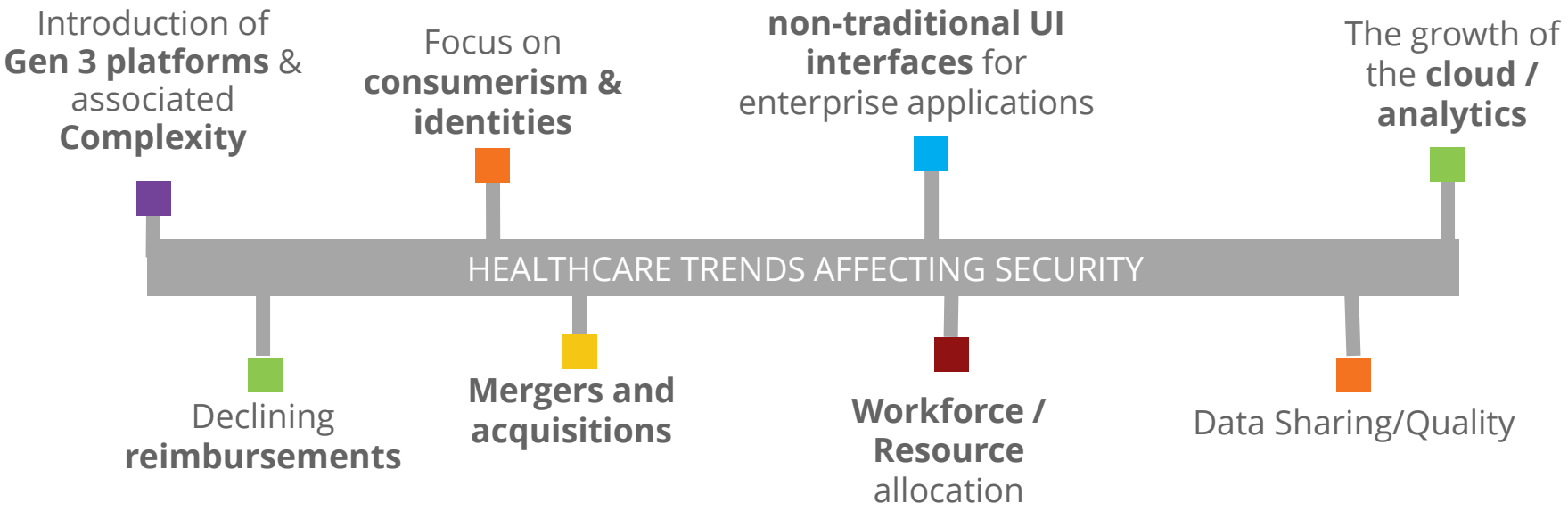


Figure 8-2. *Grobman's Curve of Maximizing Defense Effectiveness*

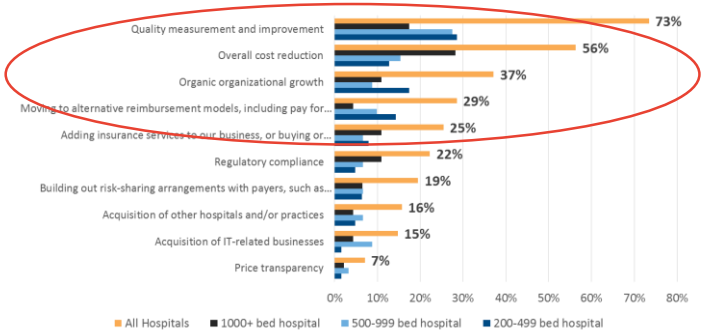
Source: The Second Economy

Investment with / without purpose..

Insight #1: Flux in the industry

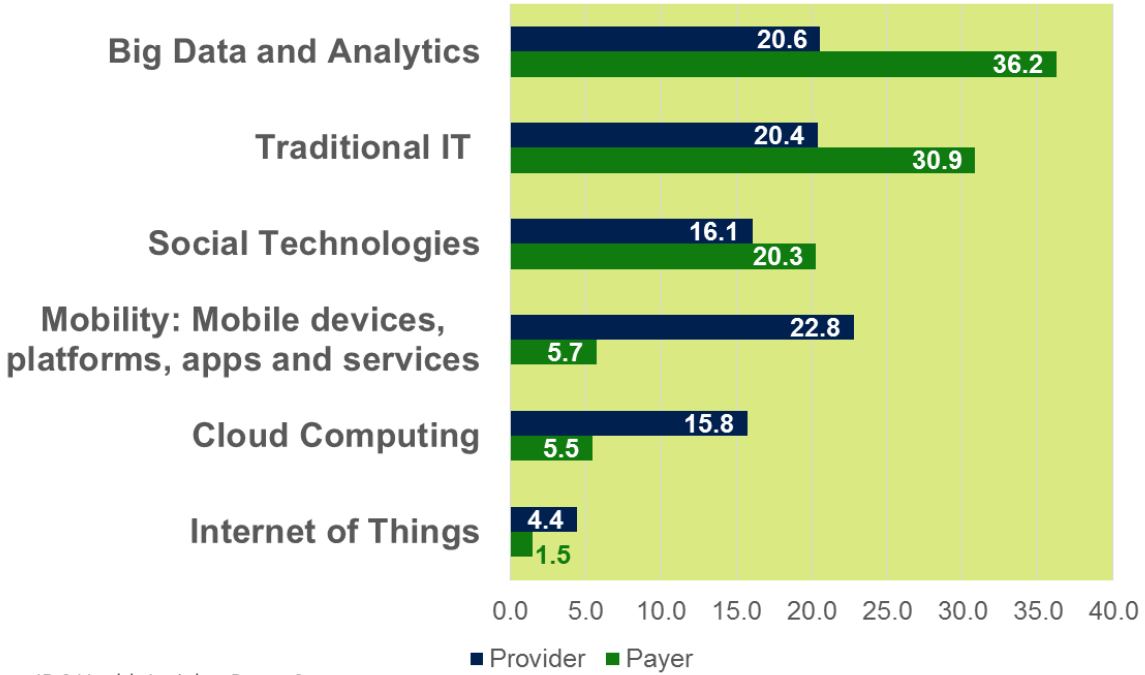


Insight #2: Disconnect with Org Strategy & Cost allocation



Source: Healthcare Provider Technology Spend Survey, IDC, October, 2015

Insight #3: Priorities for Payers and Providers

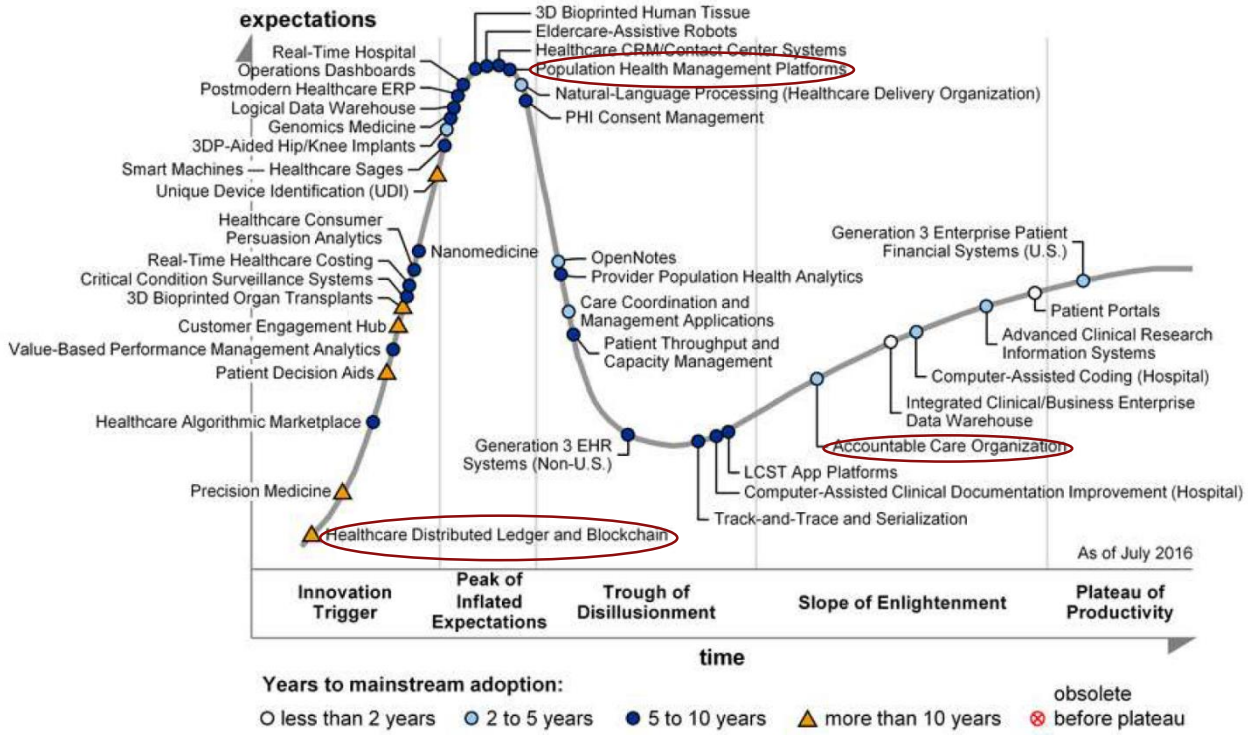


- **36%** of **payers** report **Big Data and Analytics** as #1 priority
- **23%** of **providers** report **Mobility** as #1 priority

Source: IDC Health Insights Payer Survey, June 2015, 2015-2016
Healthcare Provider Technology Spend Survey, IDC, October, 2015

Insight #4: It will take time for next gen models to be effective

Figure 1. Hype Cycle for Healthcare Providers, 2016

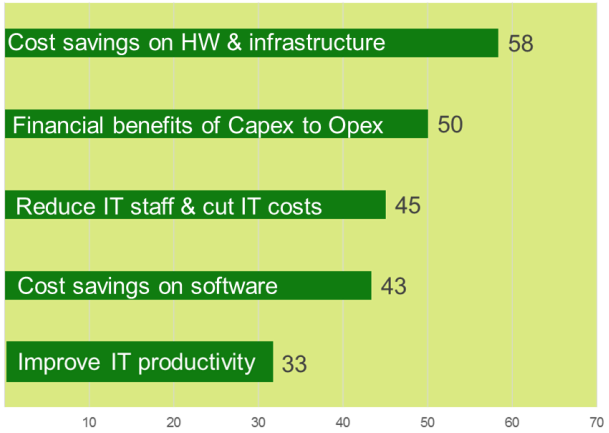


Source: Gartner (July 2016)

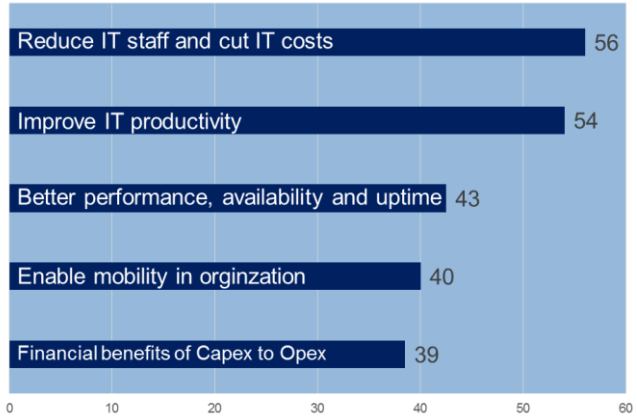
Insight #5: Cloud will power a lot of this stuff…

Yet the genesis of the cloud varies in the industry..

Payers Focused on Cost



Providers… on Productivity



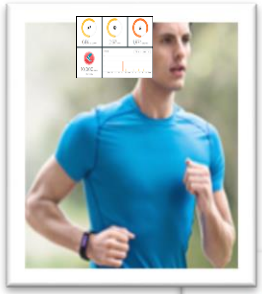
Insight #6: IoT in healthcare is also about the people…

IOT

Telemedicine / Telehealth

Remote Health Monitoring

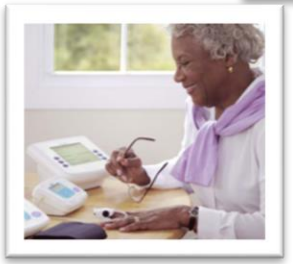
Connected Health



Fitness

In utero

Babies

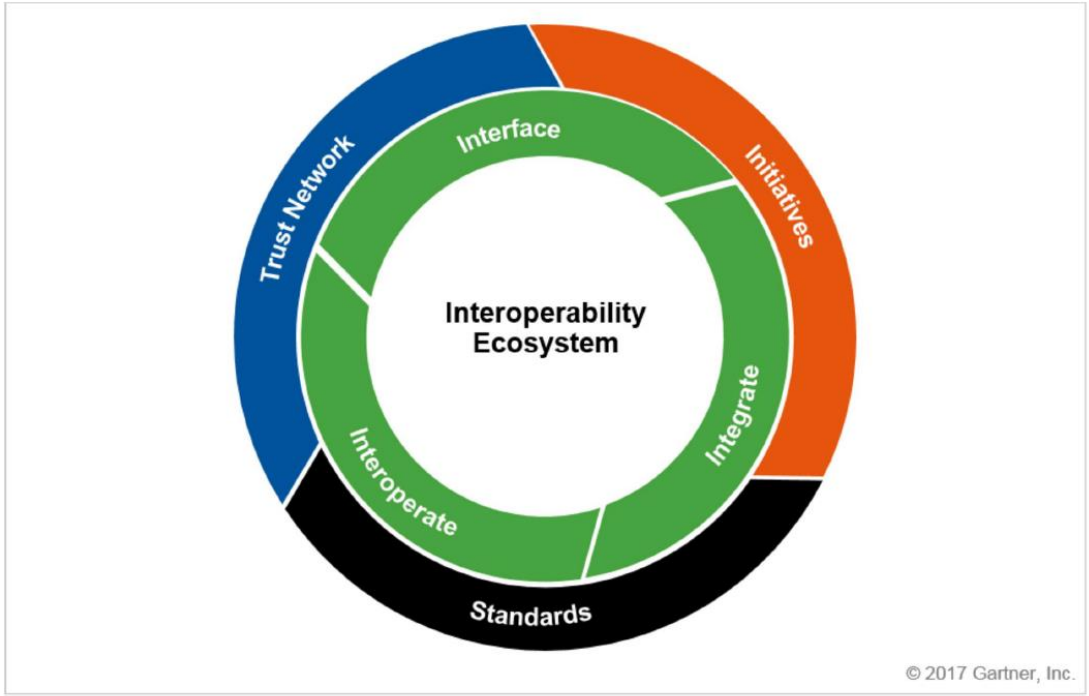


Seniors

Children

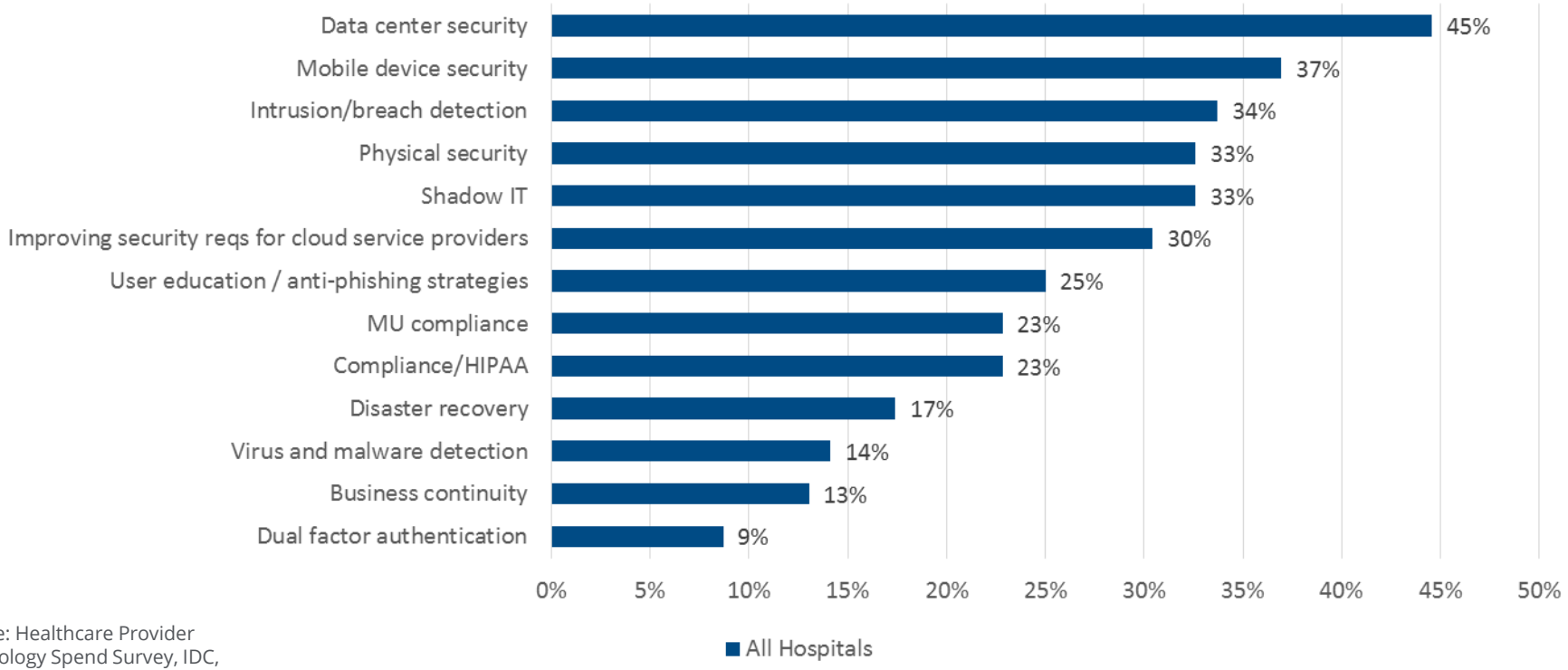
Source: IDC Health Insights' Connected Health and Value-based IT Initiatives Survey, June 2016

Insight #7: Interoperability can help.. Lets see how..



Source: Gartner (February 2017)

Insight #8: Issues of muscle memory when allocating security budgets



Source: Healthcare Provider Technology Spend Survey, IDC, October, 2015

Wrong Mission X Outdated Approach = Failure

Normally the healthcare CISO is focused on

1. Operational Efficiency
2. Regulatory Compliance
3. Data Context
4. Risk Mapping
5. Architecture Agility AT SCALE…

But the problem really is dealing with an inadequate threat model…

Adversary	Patient Health: Targeted (Specific Victims)	Patient Health: Untargeted (Indiscriminate)	Patient Records: Targeted (Specific Victims)	Patient Records: Untargeted (Indiscriminate)
Individual / Small Group				YES
Political Groups / Hacktivists /			YES	
Organized Crime	YES		YES	YES
Terrorism / Terrorist Org.	YES	YES		
Nation States	YES	YES	YES	YES

With missing asset alignment..

Patient Assets	Hospital Assets
Patient health	Research / IP
Patient records	Buisness advantage
Service availability	Hospital finances
Community confidence	Hospital reputation
	Physician reputation

Source: Securing Hospitals by ISE

In addition to a complex attack surface

Data flows are critical

Focus on data protection is NOT sustainable

Need to account for middleware in addition to application and infrastructure security

Align ERM with QI and Clinical Risk

Source :Securing Hospitals by ISE

Regulation of Choice…

- HIPAA / HITECH
  - Pay attention to updates and guidelines issued by HHS, ONC, FDA and OCR in the last 18 months
- State Security / Privacy regulations
- FTC Red Flag Rules
- PCI – DSS Implications
- FISMA Implications for clinical research
- The Joint Commission requirements for information management
  - Grossly underestimated from organizational importance to security strategy

Leads to fun conversations when talking about the buzz word… “Context”…

For Health IT … that is focused on 3 areas…. But does order matter?

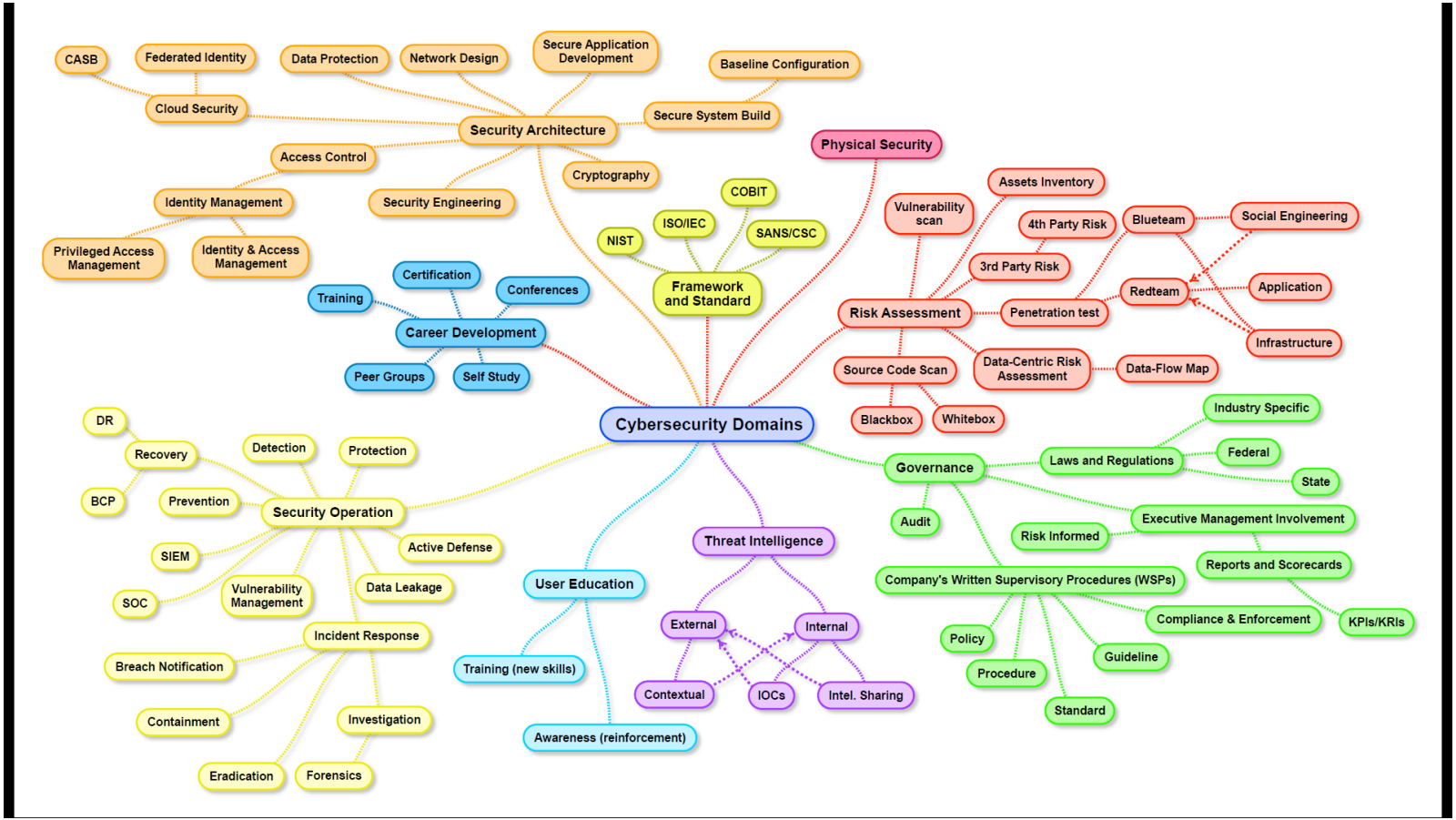
These 2 matter most for treating patients

Everyone is focused on this..

This has been an ignored area

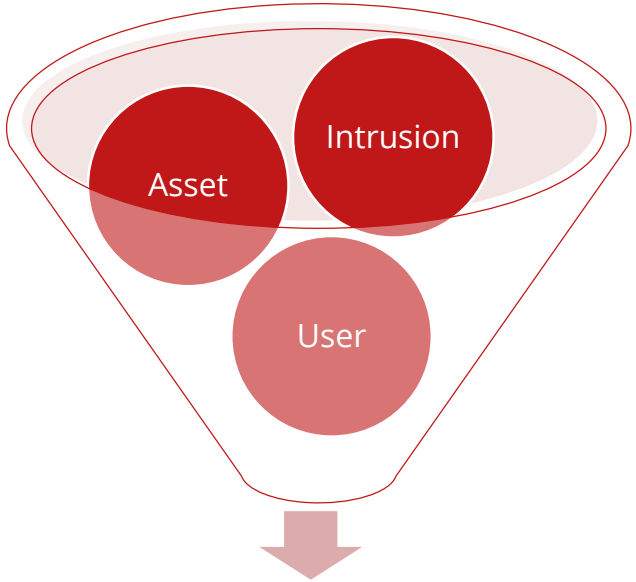
This is getting increased attention

Enough about failure... lets talk evidence based outcomes...



https://www.linkedin.com/pulse/map-cybersecurity-domains-version-20-henry-jiang-ciso-cissp

CISO Nirvana…



Taking information from security solutions to add context with the goal to color risk thresholds….

Context & Lateral Movement

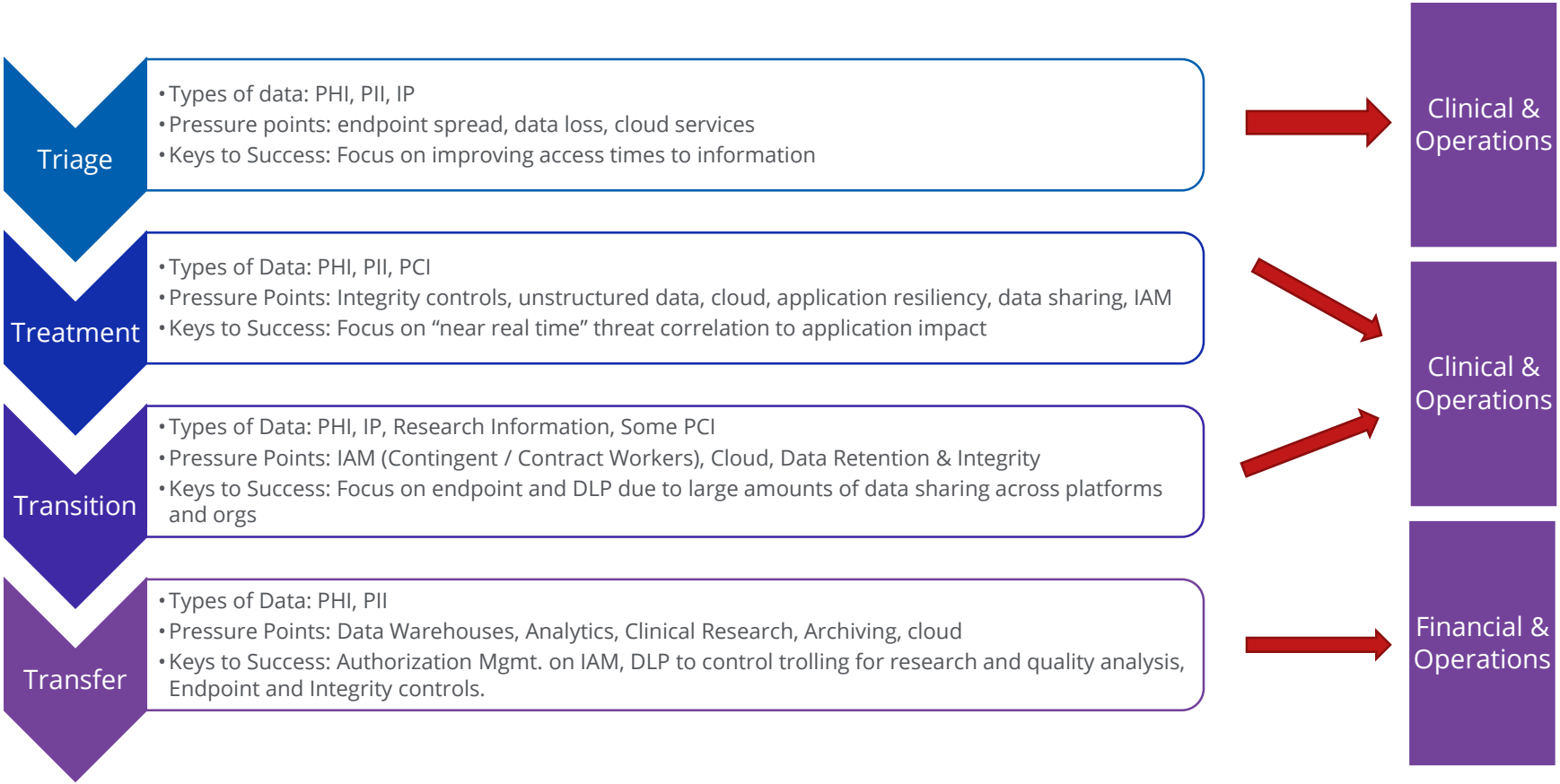
Clinical
- Patient Safety
- Clinical workflow Efficiency

Financial
- Revenue
- Operational overhead

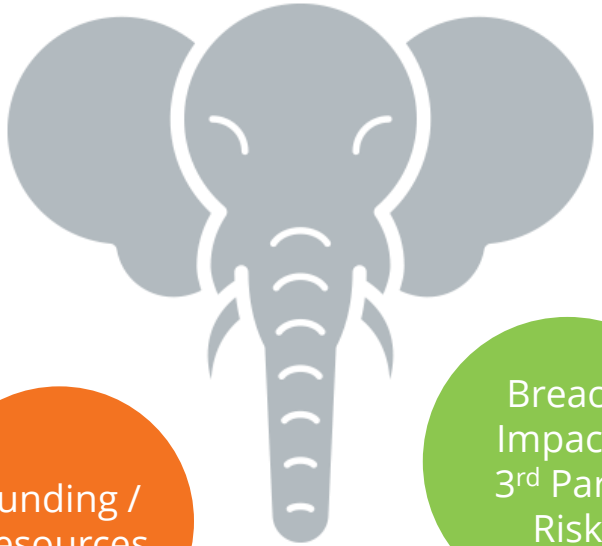
Operational
- Process impact
- Patient engagement
- Patient Satisfaction

Reputational
- Market Position
- Demographic Alignment

Example of Data flow analysis



Before the solution output can be “useful”…
We have to talk about the IT elephants' in the room:



Data Flow Mappings

Cloud Especially Hybrid Models

Application Security / Architecture

IT Hygiene

Funding / Resources

Breach Impact / 3rd Party Risk

Enterprise Analytics / Data Warehouse

Identity and Authorization

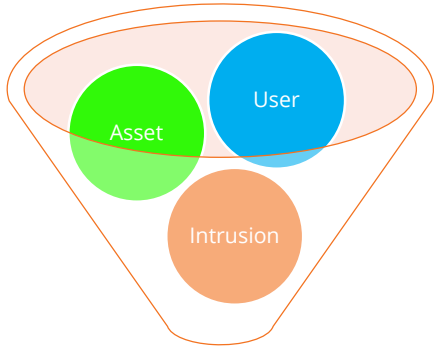
(Not Necessarily Access)

Continuity of Operations and Resiliency

Physical Security

Improving Signal to noise

Everyone is doing this

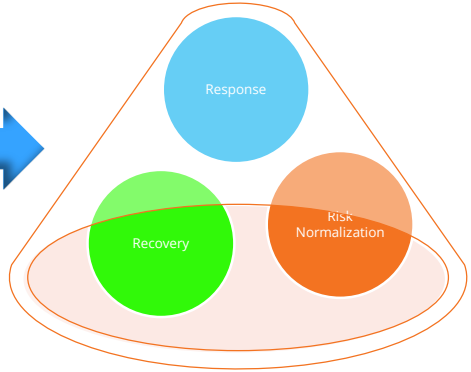


Analytics

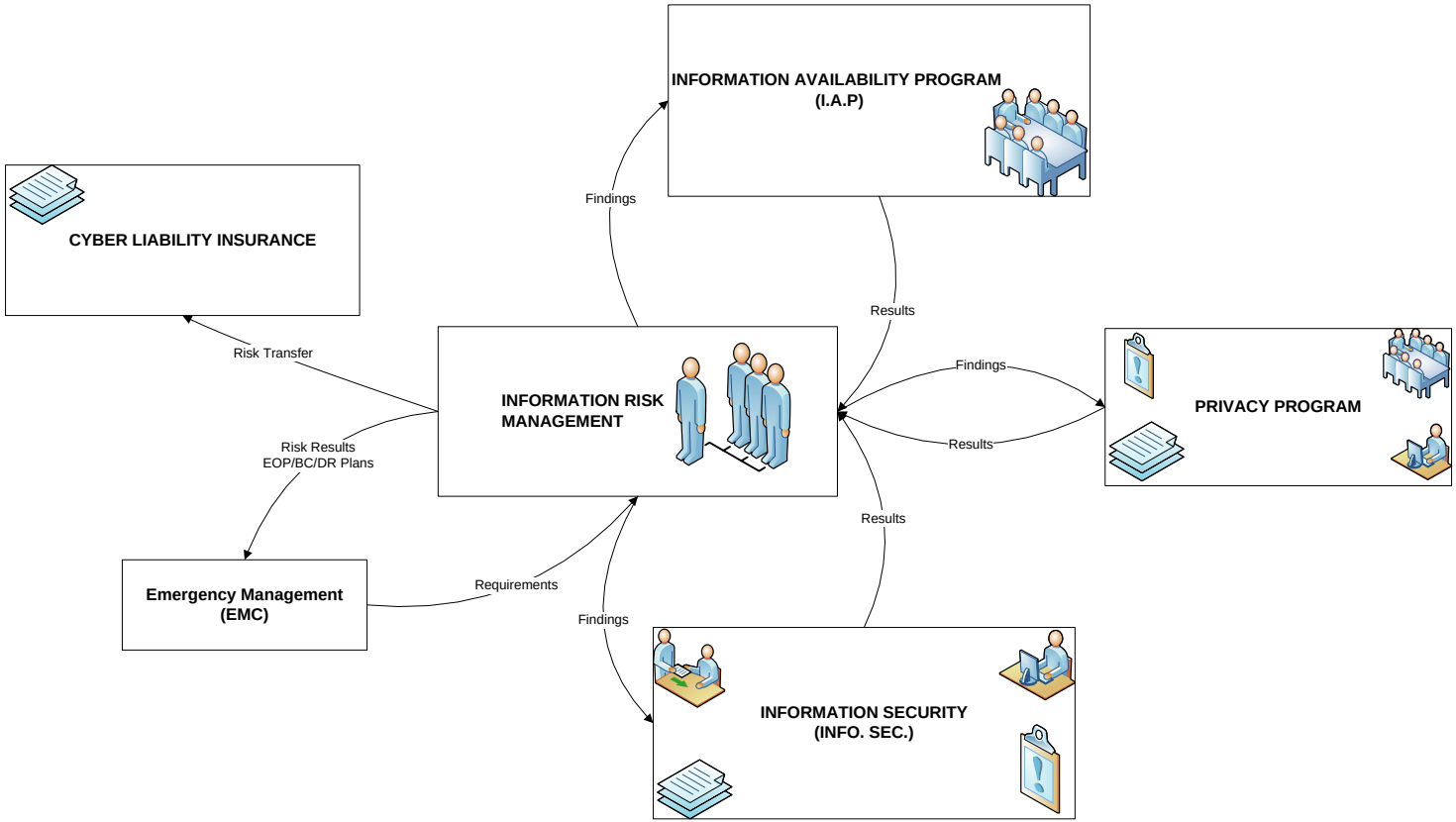
Identity Correlation
Application Mapping
Event Information
Behavior Normalization

Focus on producing "Technically Correct" **AND** "Useful" information

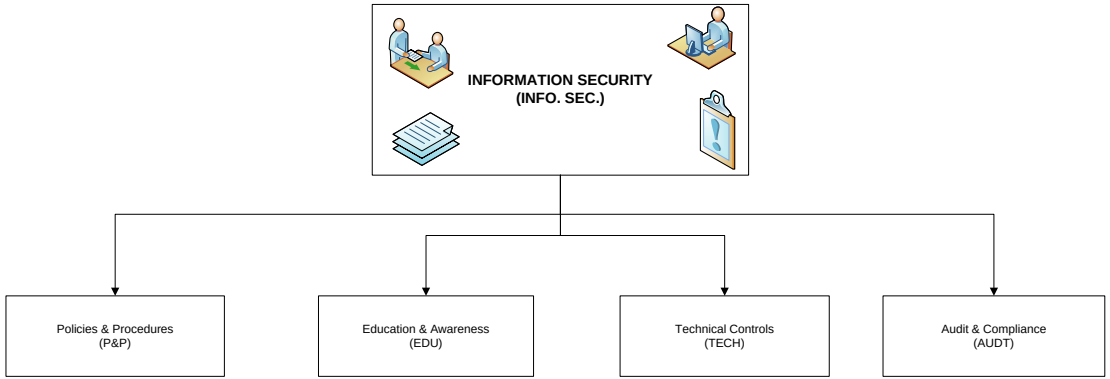
This is where you see benefits of operational "efficiency" and cost reduction outside of security

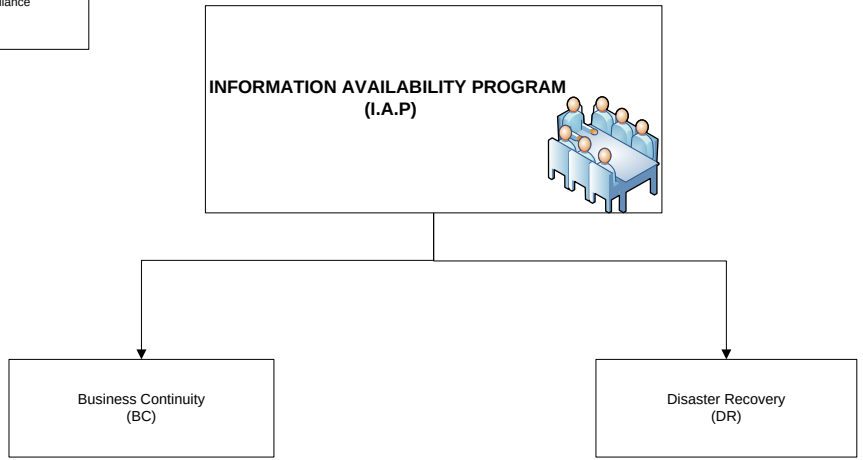


First Step

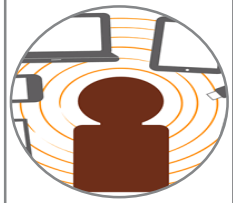

INFORMATION AVAILABILITY PROGRAM
(I.A.P)
CYBER LIABILITY INSURANCE
Findings
Results
Risk Transfer
INFORMATION RISK
MANAGEMENT
Findings
Results
PRIVACY PROGRAM
Risk Results
EOP/BC/DR Plans
Results
Emergency Management
(EMC)
Requirements
Findings
INFORMATION SECURITY
(INFO. SEC.)

Second Step


INFORMATION SECURITY
(INFO. SEC.)
Policies & Procedures
(P&P)
Education & Awareness
(EDU)
Technical Controls
(TECH)
Audit & Compliance
(AUDT)


INFORMATION AVAILABILITY PROGRAM
(I.A.P)
Business Continuity
(BC)
Disaster Recovery
(DR)

Once the paper stuff is done.. In what order do I address stuff



Asset & Config Mgmt.

Data @ Rest

Data in Transit

Flow Visibility

Analytics / Orchestration

Next Gen / Adaptive Controls

Application Security / IAM

Cross-Platform Integration

Open Standards based - Bi-Directional – “Near Real Time” Protocol

Fact Check: When Security Starts to Work Together

Average timeline of tangible improvements to security posture is 2 - 3 years

Info Sec Operating Budget grows ~1% to ~5%

Security FTE Stats
- Per 1000 end users
  - Before: 0.4 – 0.5 FTE
  - After: 2 – 3 FTE

Average financial savings from consolidation is ~10 - 30 % over 2 years

Average analyst time spent on incident investigations reduces from *3 – 72 hours* to **15 – 60 min**