



# Internet of Things (IoT) Retos y oportunidades

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# ¿Qué esta ocurriendo?



- En el año **2018**, existirán mas de **4.000** M usuarios Internet
- En el **2020**, habrá **50.000** M de objetos conectados a Internet
- En el **2020**, los Sensores generarán el **40%** de los datos
- El **40%** Fortune 500 no sobrevivirán en los próximos **10** años por falta de Innovación, Velocidad, Reinención

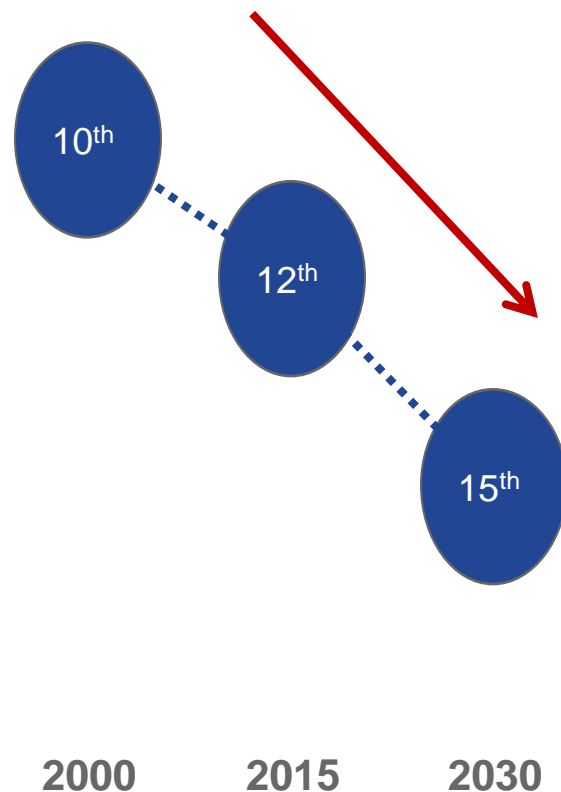
*“ In 10 years, it’s predicted that **40%+** of Enterprise companies will no longer exist.”*

Babson Olin School of Business, Fast Company

**DISRUPT** OR  
**BE DISRUPTED**

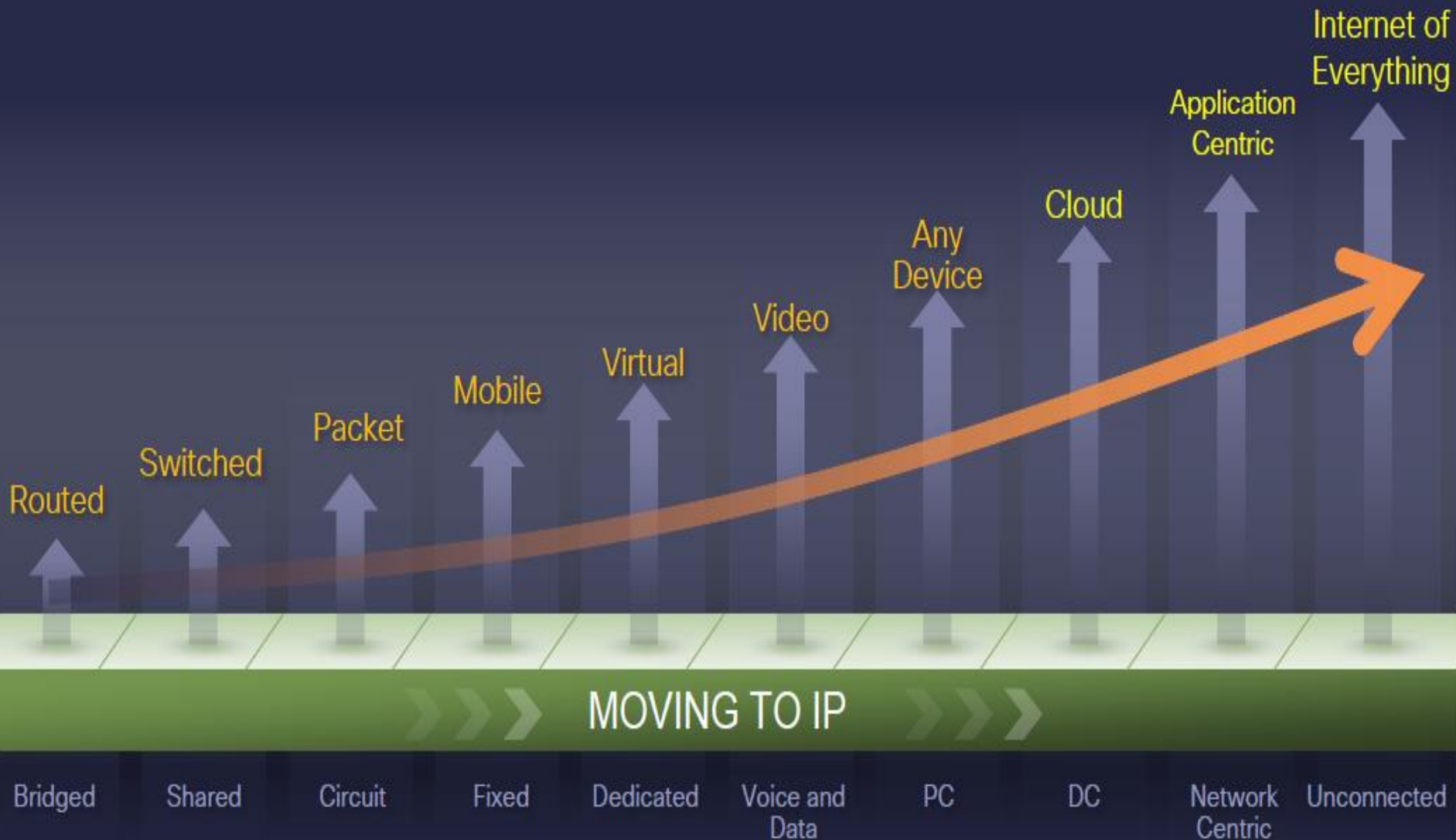
# Spain Changing Rank In The Next Decade

## Spain's Global GDP Rank



- GDP – Spain ranks 12<sup>th</sup> globally, but is expected to fall to 15<sup>th</sup> by 2030<sup>1</sup>
- **Global Competitiveness Index<sup>2</sup> – Spain ranks 33<sup>rd</sup>.**
- GCI improved from 35<sup>th</sup> due to market reform packages
- Compared to its GCI peers, Spain
  - is stronger in infrastructure and education
  - impedes investment due to access to finance and labor
  - needs to improve on institutions' competitiveness and fostering innovation

# "The Disruptor" Technology Transitions



# IoE Consists of M2M, M2P, and P2P Connections

IoE Value  
(2013-2022)

## CONNECTION TYPE



### Machine-to-Machine (M2M)

- Data sent / received from one machine (thing) to another
- Often called the “Internet of Things”

**\$7.4  
Trillion**



### Machine-to-Person (M2P)

- Data sent / received from a machine (thing) to a person
- Often called “data and analytics”

**\$4.6  
Trillion**



### Person-to-Person (P2P)

- Data sent / received from one person to another
- Often called “collaboration”

**\$7.0  
Trillion**

Information Technology (IT)

Operational Technology (OT)

Datacenter



Campus



Branch



Plant



Field



IoT

# Internet of Things: 4 Key Areas for the Theme

**Thesis:** Gain understanding into complete end-to-end solutions – web/mobile interfaces, network infrastructure & sensor – offerings

**End to End  
Solutions &  
Services**

**Application  
Enablement**

**Thesis:** Gain insight into a application platform that can expose relevant APIs – asset monitoring, tracking , control– to end applications such as Oracle CRM, Sales force, SAP

**Internet of  
Things**

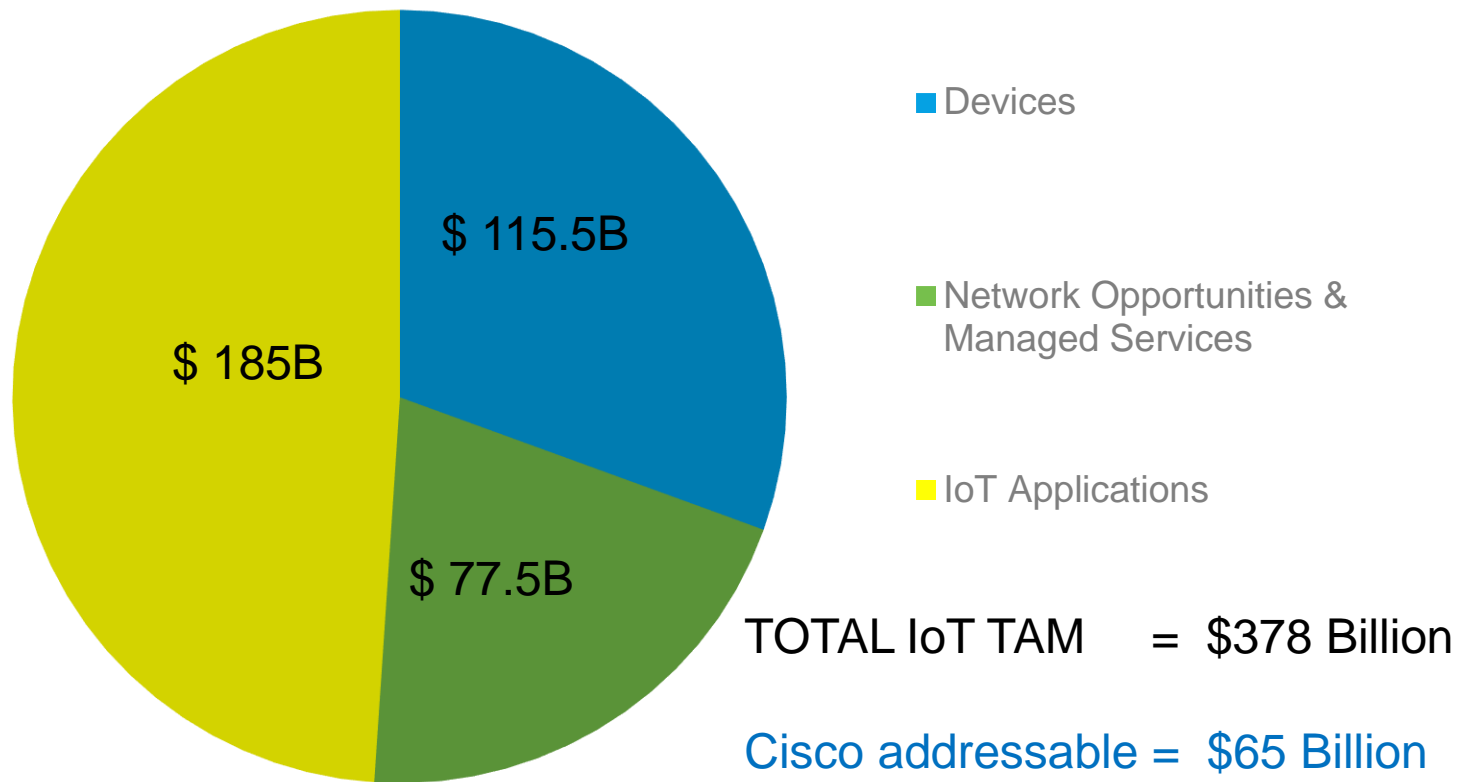
**Thesis:** Gain insight into vertical specific and other new analytics technologies for IOT

**Analytics**

**Security**

**Thesis:** Critical feature across sensors, connectivity & data. Evaluate new and differentiated technologies for IOT

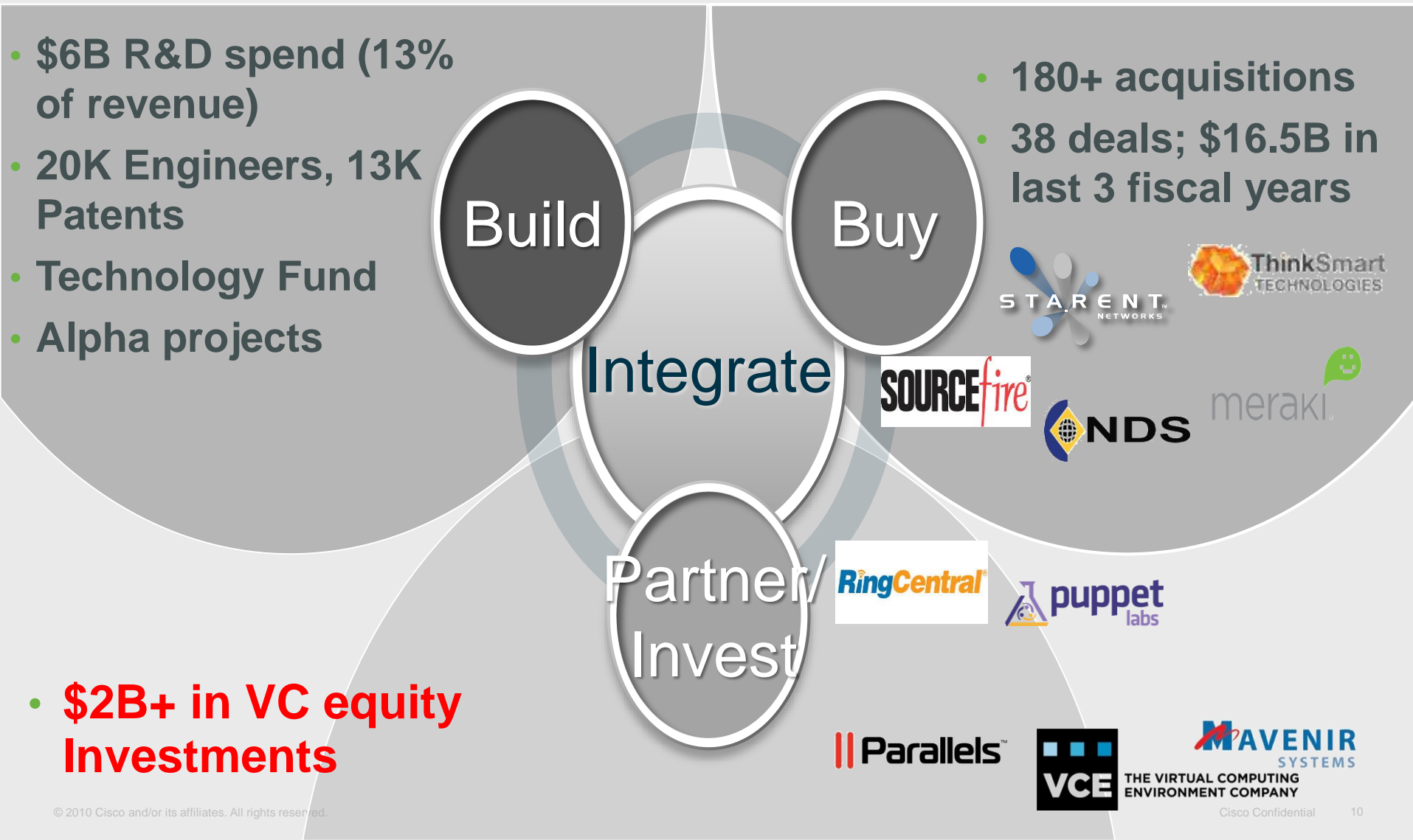
# IoT Total Addressable Market in 2015



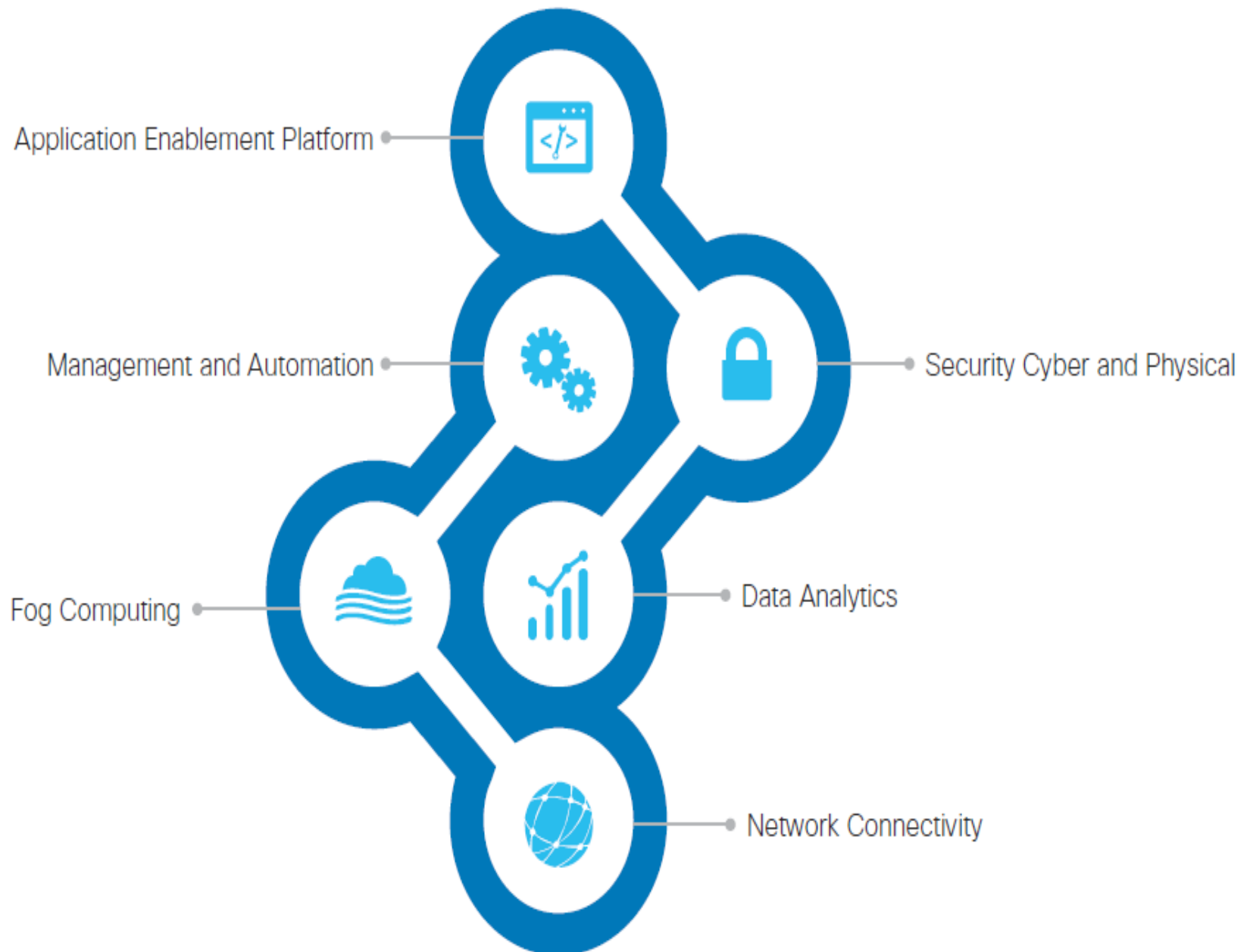
Source: Cisco Internal White Paper, *Understanding the Paradigm Shift and Implications for Cisco*,



# Cisco's Levers for Innovation



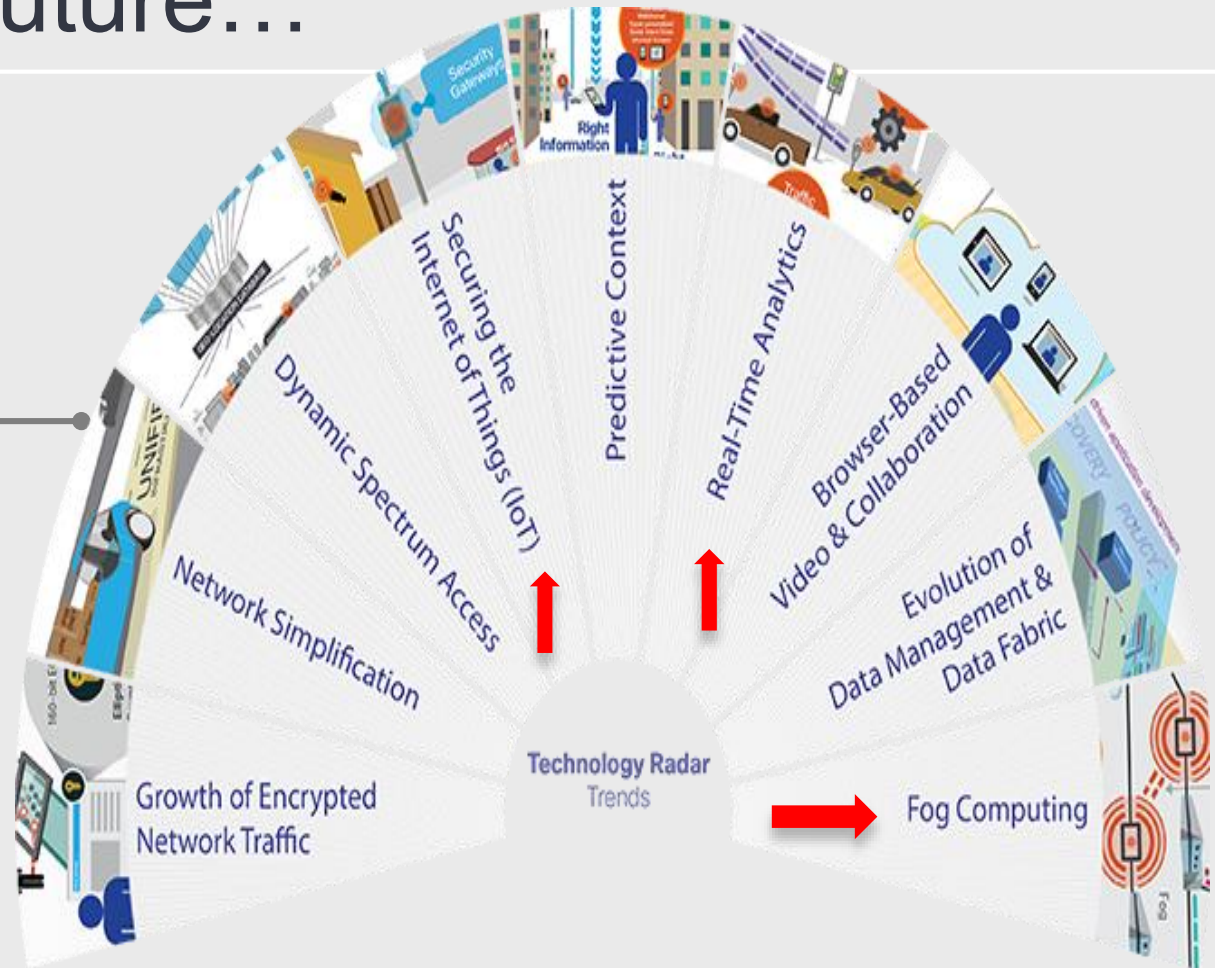
# Cisco IoT System



# Shaping the future...

## Tech Radar

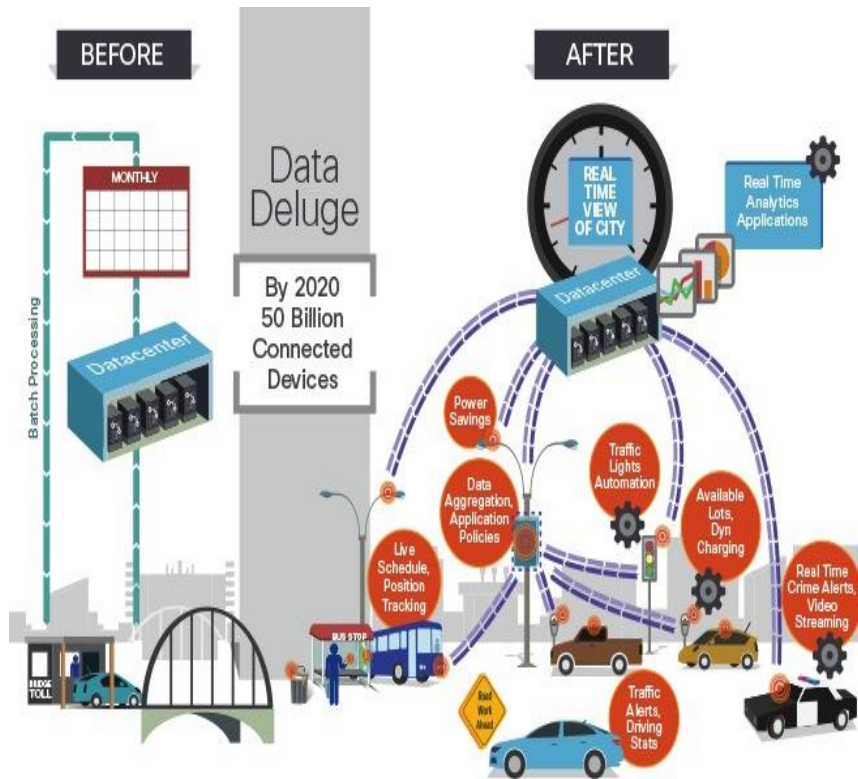
The next big disruptions



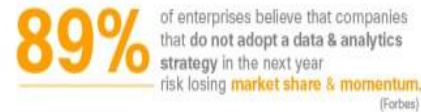
# Insights on Real-Time Analytics:

*Real-time data analytics is reshaping businesses*

[techradar.cisco.com/leading-in-real-time](http://techradar.cisco.com/leading-in-real-time)



## Data & Analytics



Optimize data, reach what you need & discover game-changing, network-powered analytics.

**48%** of CEOs see data analytics as an investment priority and strategically 'very important' for their organization (PWC annual CEO survey)



## Relevant Technologies

Service Analytics

RT Analytics

Scale-out DB

IMDG

Real-time CSR

Large-Scale FR

Hadoop

Indoor Positioning

## Relevant Companies

Apptio (Cisco Investment)

Bit Stew (Cisco Investment)

Cinarra (Cisco Investment)

Corvil (Cisco Investment)

Loggly (Cisco Investment)

OpTier (Cisco Investment)

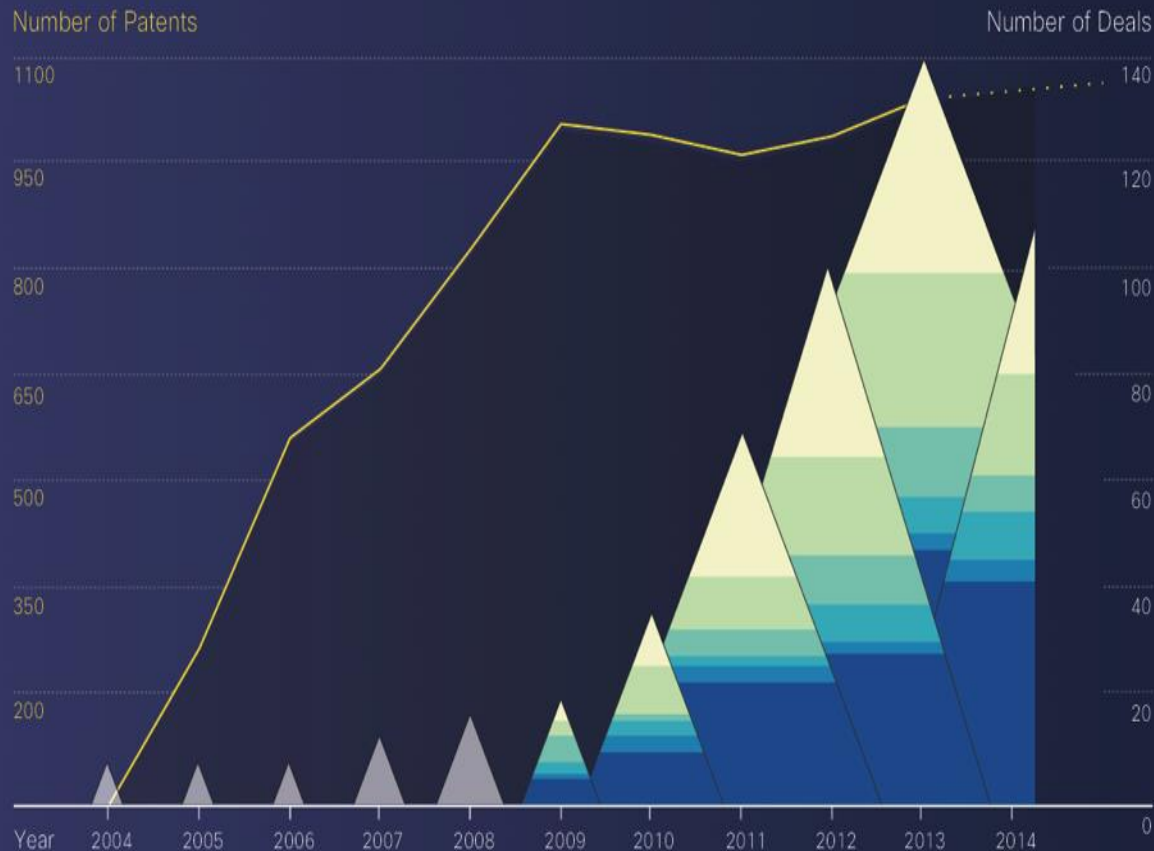
Quantcast (Cisco Investment)



# Real-Time Analytics

Better business decisions with the right information at the right time.

Real-Time  
Analytics  
Innovations  
Paved the Way  
for New Venture  
Creations.



Inventive Activity  
Repartition:



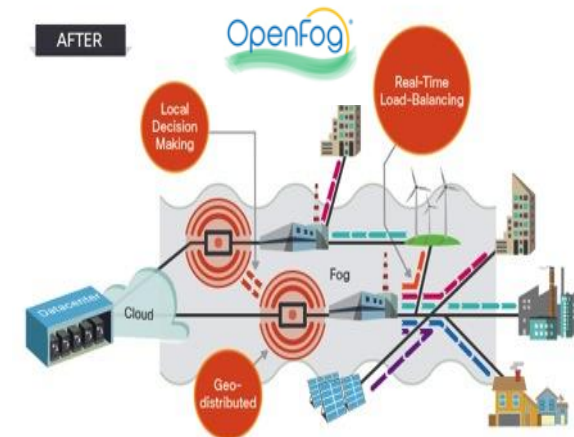
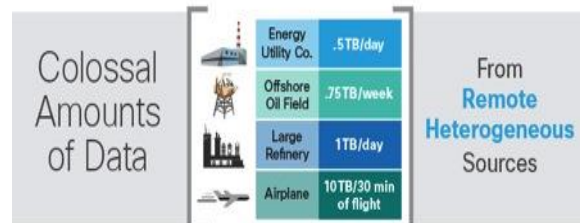
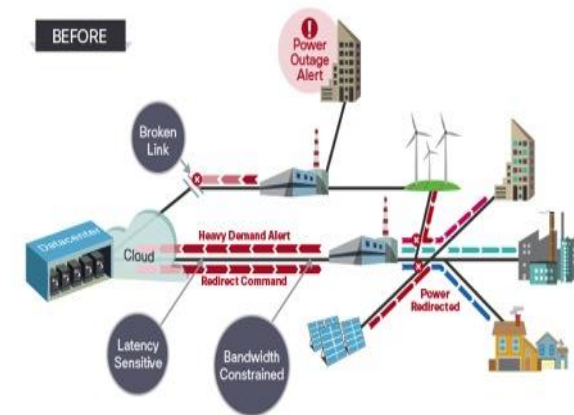
Small Patent Portfolios  
Large Patent Portfolios

Number of Investments



# Insights on Fog Computing:

*Fog Will Help Shape the Success of IoT*



Fog computing is...

A system-level architecture

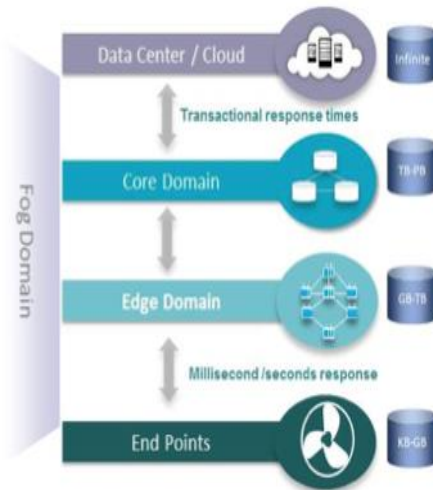
to extend

Compute

Network

Storage

Capability of Cloud to the edge of the IoT network



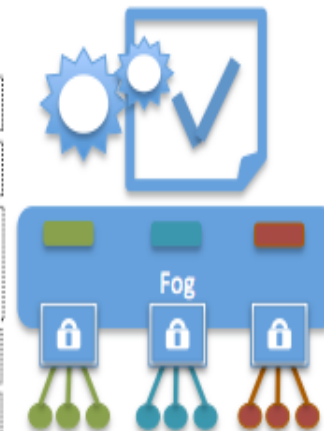
Easier management of services

Virtualized edge services

Single platform with build in security, policy & service lifecycle management

Localized consistent security

Sensors



## Relevant Technologies

Mobile Code Offloading

RAMCloud

RT Analytics

IMDG

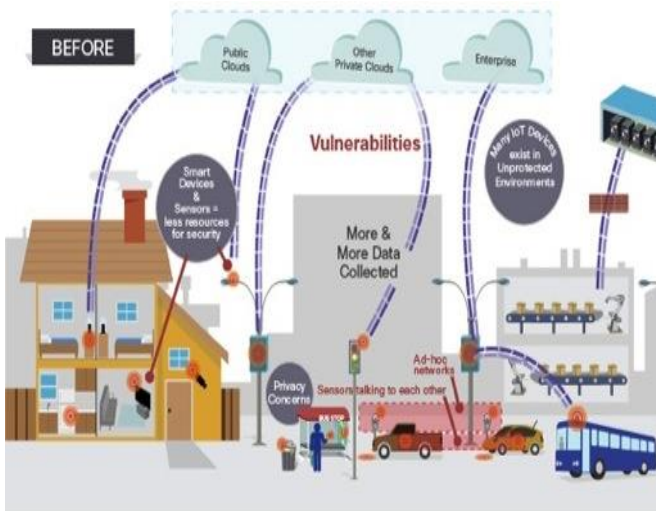
Security SW SoC

LTE-A

Biometrics in the Network

# Insights on Securing the IoT:

*By 2022, Security solutions will be the foundation of the \$ 6.1 trillion IoT business*



## Relevant Technologies

Secure Wireless Pairing

Security SW SoC

Security for ICS

MDM

LBS

SEP 2.0 and Zigbee IP

Car-2-X

Web of Things

FRM

Nano-Networks

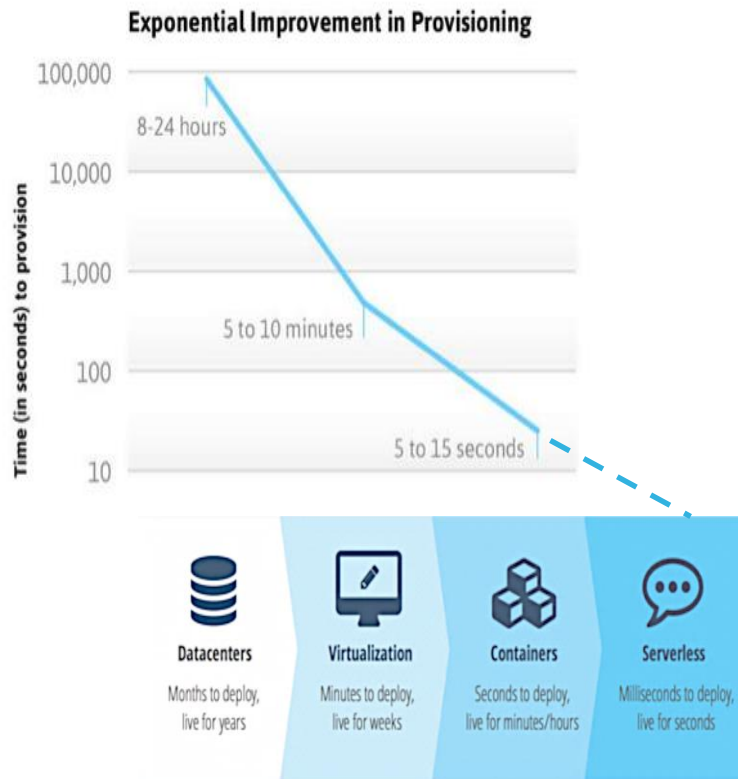
Blockchain

Edge Device Communication Protocol (EDCP)

Ubiquitous Encryption

# Insights on New Computing Platforms:

*The adoption of Containers has been one of the big infrastructure trends in past year*



Source: [thenewstack.io](http://thenewstack.io)

## Relevant Technologies

Nested Virt

Zero-Weight VPs

Network Hypervisor

Virtual Array Systems

Silicon Photonics

NoC

IMDG

3D IC

Next-Gen Computing

STT-MRAM

DCTCP

Memristors

Server FPGAs

## Academic Projects

MIT: Factored Operating System (FOS)

MIT: ExoKernel

ETH: Barrelfish

EPFL: Scale-Out Non-Uniform Memory Access (soNUMA)

Berkeley: terraswarm

HP LABS - 'The Machine'

Microsoft Research - Rack-scale Computing

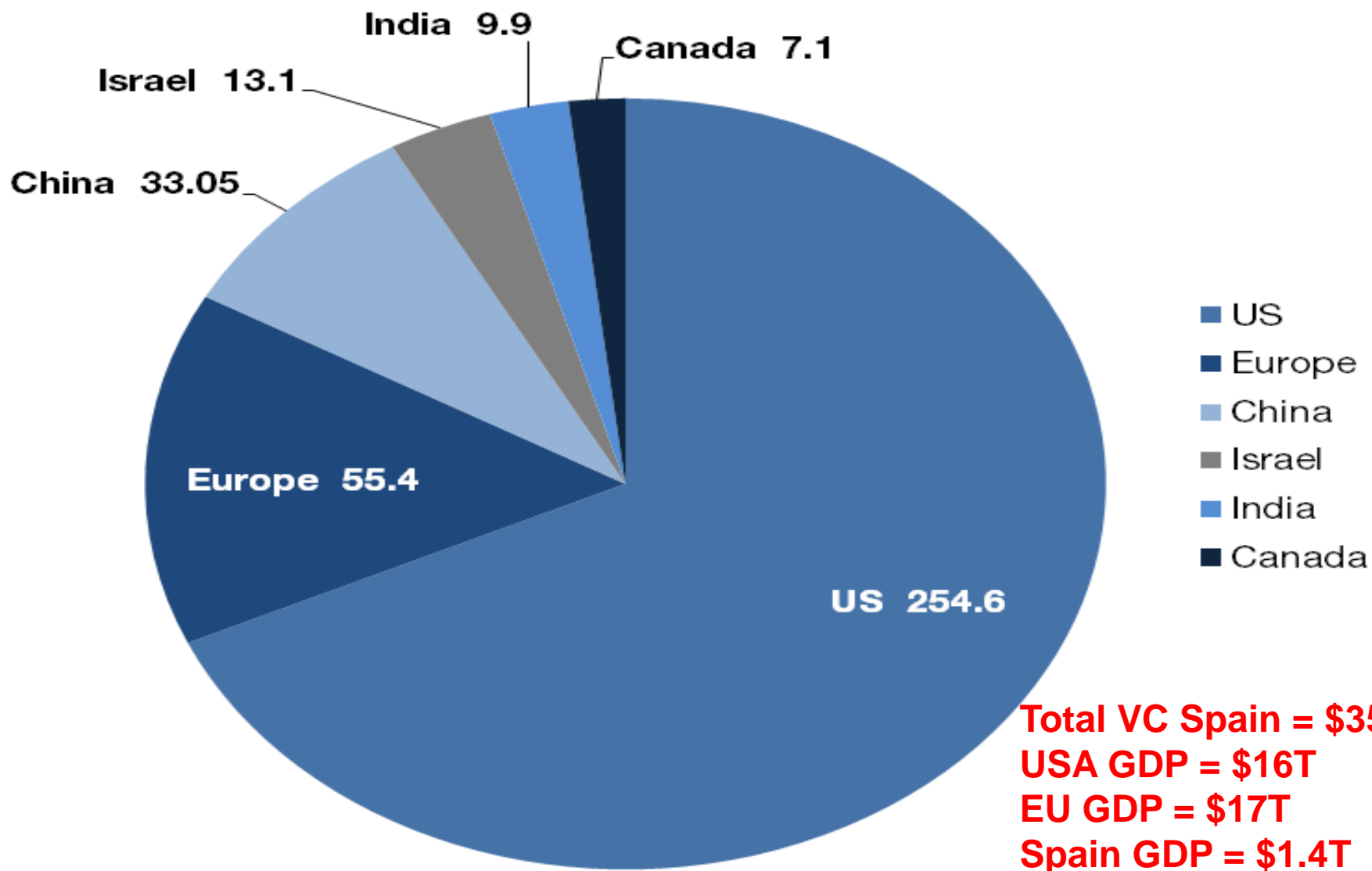
Cycle Computing

VMware hyper-converge means WE don't NEED no STEENKIN' OS...

Cisco Next Generation OS presentation at CERN

# Top countries for total venture capital invested

Share of total venture capital invested 2006-2013, \$ billions



# Open Innovation at Cisco

- **Open innovation** is a paradigm that assumes that firms can and should use external ideas as well as internal ideas.
- **Open innovation** combines internal and external ideas into architectures and systems whose requirements are defined by a business model.

# Why Open Innovation is key to drive loE market

Customers are excited on the potential of loE. Open Innovation is key to accelerate the market take off

Cisco's broad portfolio sets us up for success, but loE solutions need applications to solve our customer's most pressing business challenges.

Applications and application enablement are critical control points for the loE architecture. If we don't invest here, we will be disintermediated by those who do.

OPEN INNOVATION  
across different vertical  
segments is KEY to  
accelerate loE market  
take off

Need to have vertical-specific applications and services.

loE Application Enablement is critical for developing the innovative platforms, services (analytics) and architectures our customers will demand as loE gains traction in the marketplace.

To capture loE value, our customers need applications that are relevant to their industry and business challenges

# Top Challenges to Become Digital

- Company Culture
- Cooperation between Teams & Silos
- Resources
- Security
- Linear vs. Exponential Thinking

# ARE YOU READY?

Digital World  
Speed... Innovation / Disruption