Effect of the Internet-of-Things on Fire Control and Weapon Systems

Authored by

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DID YOU KNOW?

- Insert Video Link

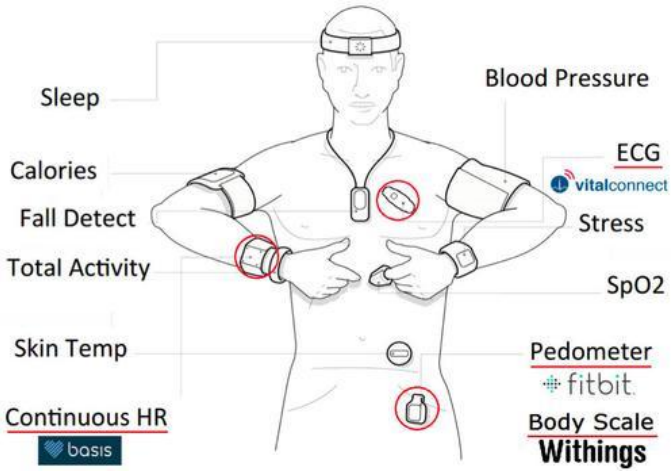
https://www.youtube.com/watch?v=YmwwrGV_aiE

Credit: iStockphoto/chris_lemmens

Internet Of Things (IoT)

Internet-connected machines and sensors

- Cheaper Sensors
- Mass data to Big Data
- AI & Robot Diversity

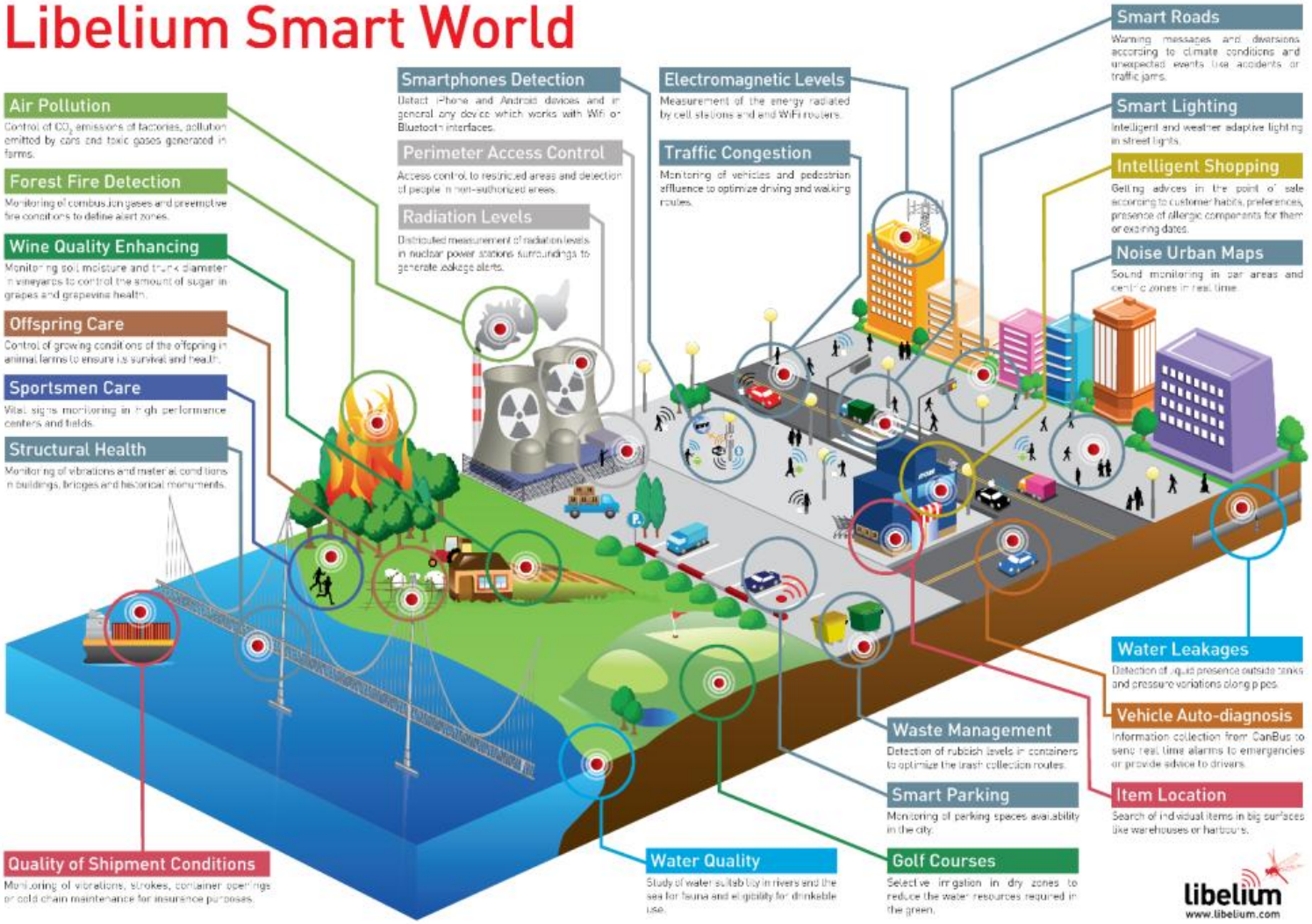


Malcolm Baldrige National Quality Award 2007 Award Recipient

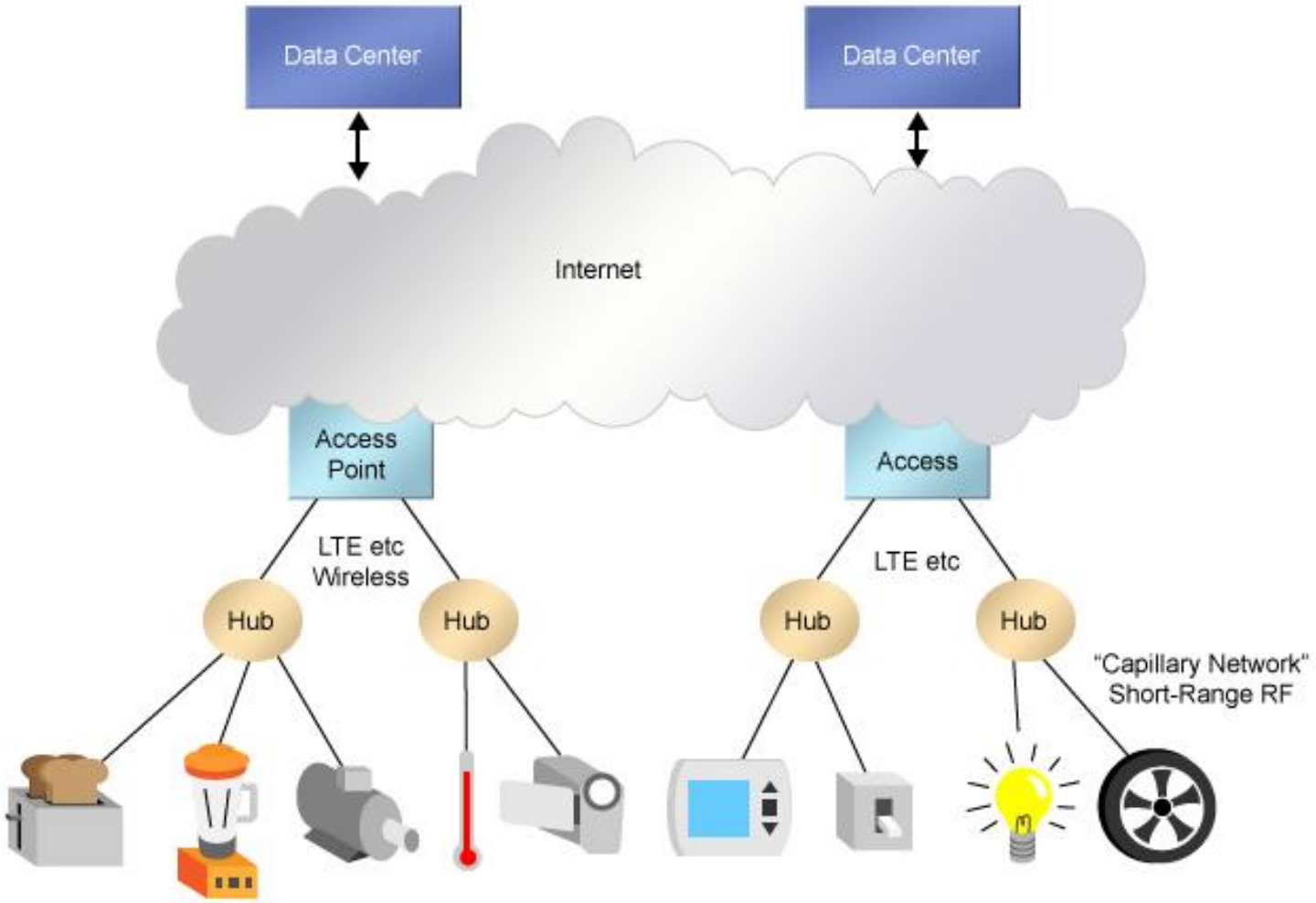
TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED

3

System of IoT



Internet of Things (IoT)



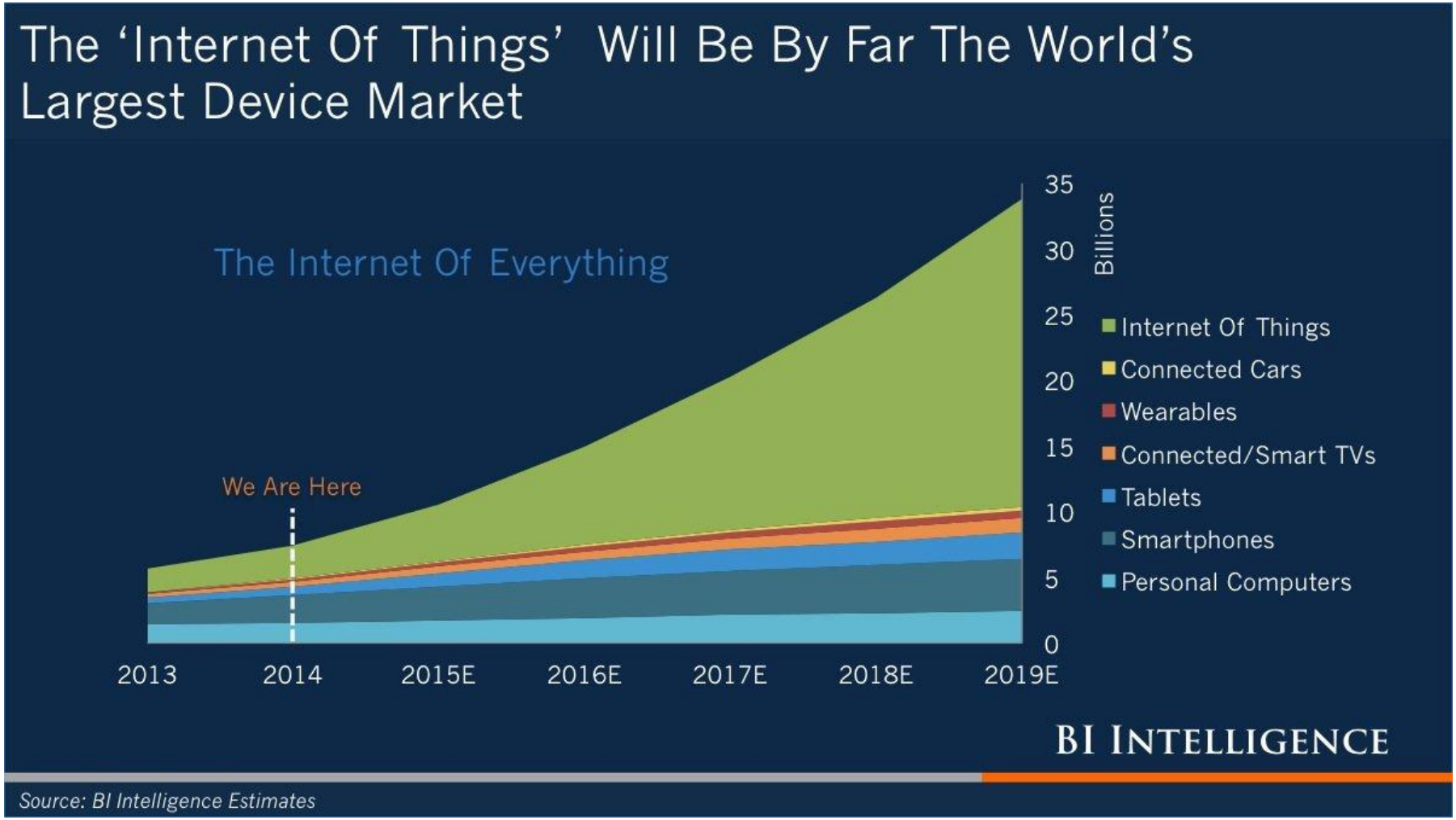
Applications

1. Retail and Logistics
2. Product Management
3. Wearables
4. Surveillance
5. Telemedicine
6. Environmental Monitors
7. Smart Buildings
8. Infrastructure Monitoring
9. Telematics
10. Waste Management (Energy)

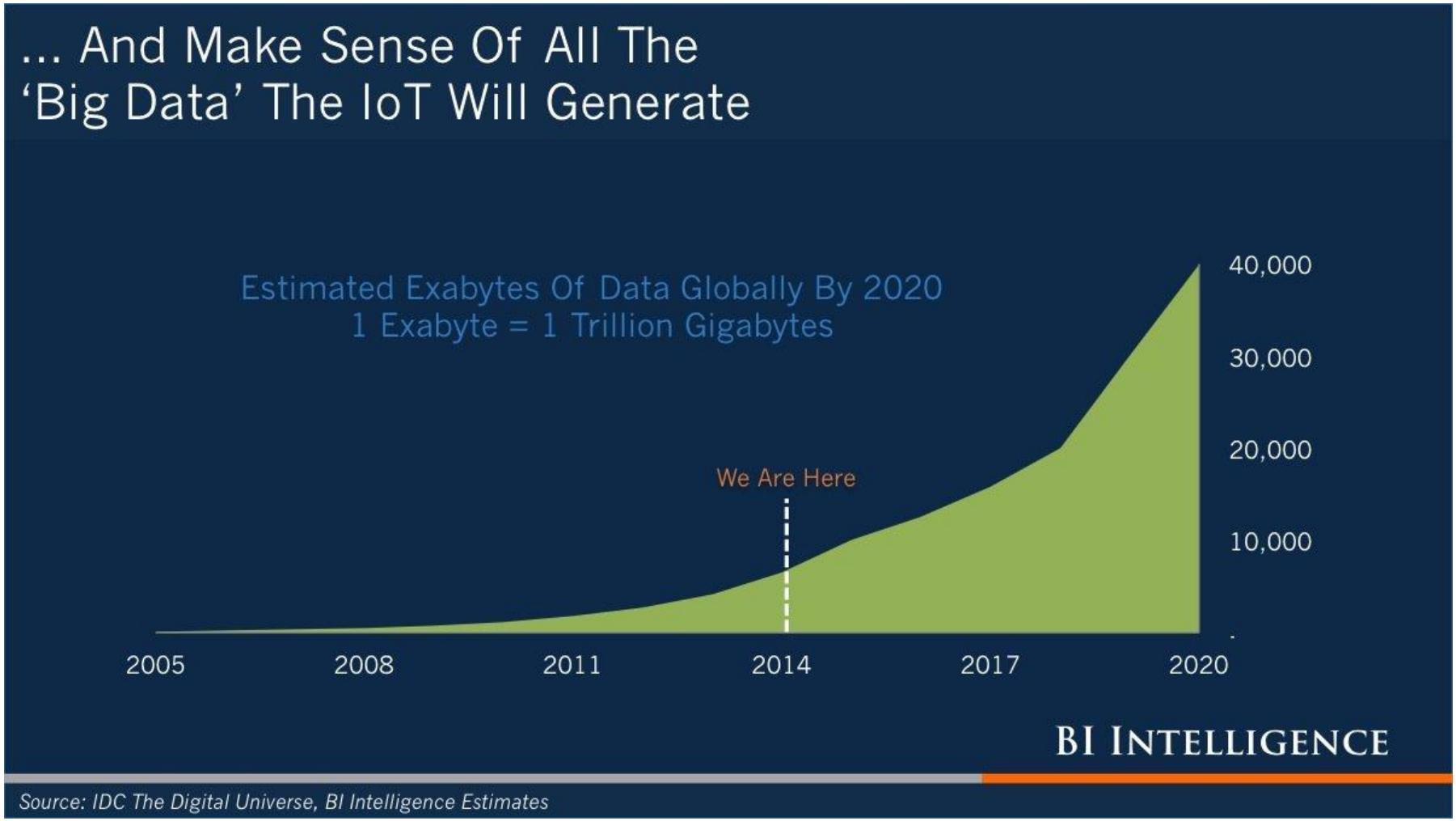
Emerging Technologies and Their Impact on the Economy - 2025

1. 3D Printing (Robotics, Materials) - $11T
2. Automation of Knowledge Work (Algorithmics) - $9T
3. The Internet of Things (Billion Sensors, RF, Nets) - $8T
4. Next Gen Genomics (Sensors) - $6.5T
5. Advanced Robotics (Controls, Reliability, Actuators, Algorithmics) - $6T
6. Autonomous Vehicles (Sensors, Nets, MIPS, Actuators) - $6T
7. Renewable Energy (Materials, Infrastructure) – $3.5T
8. Energy Storage (Chemistry, MEMS, MicroFluidics) - $2.5T
9. Mobile Technology (RF, Low Power, High MIPS) - $1.7 T
10. Cloud and Fog (CISCO) Technology (Redundancy, Storage) – $1.7T
11. Advanced Materials (Metastructures, Ceramics, Nanotech) - $1.2T

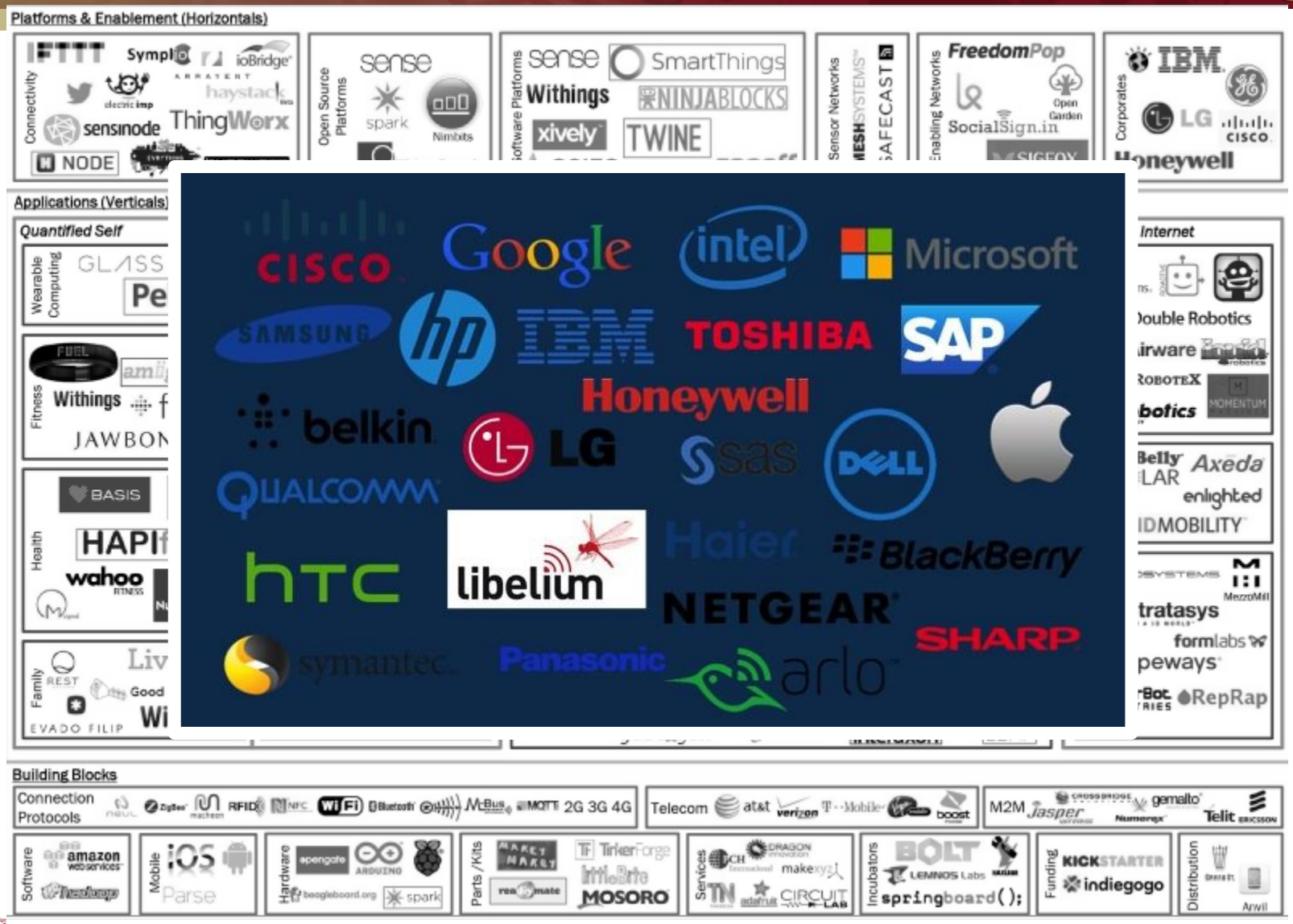
Road Map


The 'Internet Of Things' Will Be By Far The World's Largest Device Market
The Internet Of Everything
We Are Here
35
30
25
20
15
10
5
0
Billions
2013
2014
2015E
2016E
2017E
2018E
2019E
Internet Of Things
Connected Cars
Wearables
Connected/Smart TVs
Tablets
Smartphones
Personal Computers
BI INTELLIGENCE
Source: BI Intelligence Estimates

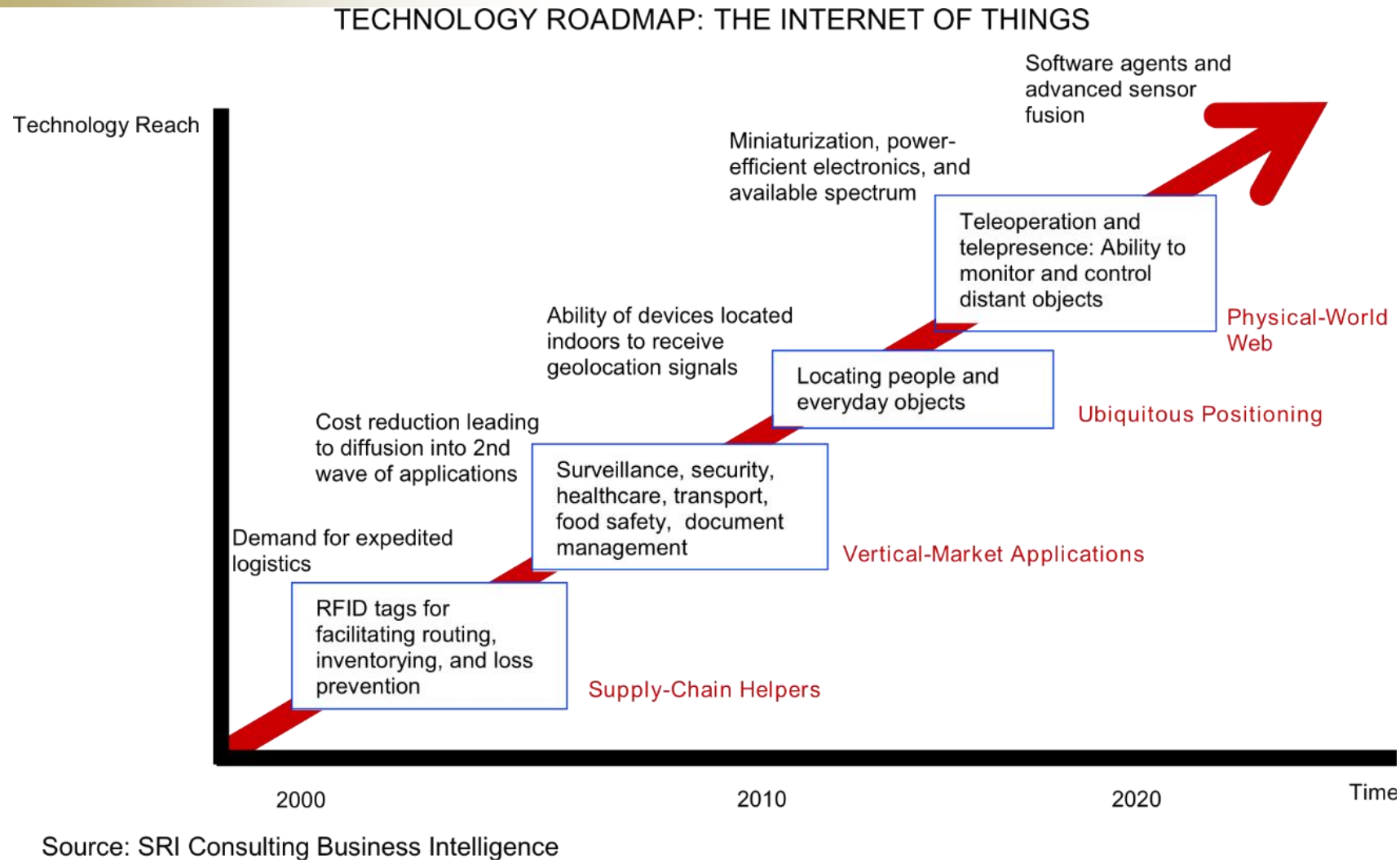
Road Map


... And Make Sense Of All The
'Big Data' The IoT Will Generate
Estimated Exabytes Of Data Globally By 2020
1 Exabyte = 1 Trillion Gigabytes
40,000
30,000
20,000
10,000
We Are Here
2005
2008
2011
2014
2017
2020
BI INTELLIGENCE
Source: IDC The Digital Universe, BI Intelligence Estimates

Players


Platforms & Enablement (Horizontals)
Connectivity
IFTTT
Sympl
ioBridge
electric imp
haystack
sensinode
ThingWorx
NODE
Open Source Platforms
sense
spark
Nimbits
Software Platforms
sense
SmartThings
Withings
NINJABLOCKS
xively
TWINE
Sensor Networks
SAFECAST
Enabling Networks
FreedomPop
Open Garden
SocialSign.in
Corporates
IBM
LG
cisco
Honeywell
Applications (Verticals)
Quantified Self
Wearable Computing
GLASS
Fitness
FUEL
Withings
JAWBONE
Health
BASIS
HAPIfork
wahoo FITNESS
Family
REST
Good
EVADO FILIP
Internet
Double Robotics
ROBOTEX
botics
Belly
LAR
Axeda
enlighted
IDMOBILITY
MezzoMill
tratasys
formlabs
peways
RepRap
CISCO
Google
intel
Microsoft
SAMSUNG
hp
IBM
TOSHIBA
SAP
Honeywell
belkin
LG
sas
DELL
QUALCOMM
libelium
Haier
BlackBerry
htc
NETGEAR
SHARP
symantec
Panasonic
arlo
Building Blocks
Connection Protocols
ZigBee
RFID
NFC
Wi Fi
Bluetooth
MQTT
2G 3G 4G
Telecom
at&t
verizon
T-Mobile
boost
M2M
Jasper
gemalto
Telit
ERICSSON
Software
amazon web services
Mobile
iOS
Parse
Hardware
spengate
ARDUINO
beagleboard.org
spark
Parts /Kits
MAKER MARKET
TinkerForge
littleBits
MOSORO
Services
DRAGON innovation
makexyz
CIRCUIT LAB
Incubators
BOLT
LEMNOS Labs
springboard();
Funding
KICKSTARTER
indiegogo
Distribution
Arwil

Road Map

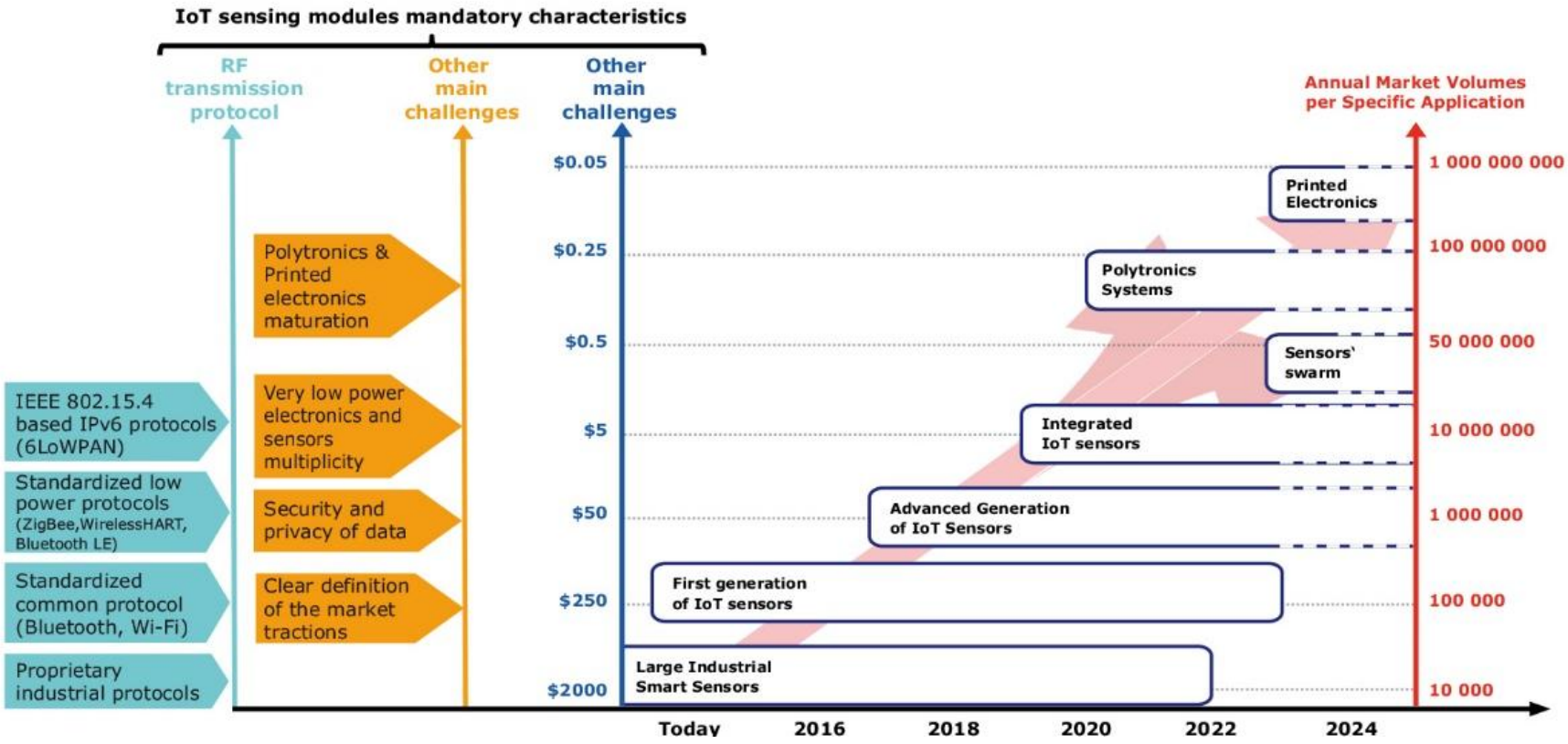


Source: SRI Consulting Business Intelligence

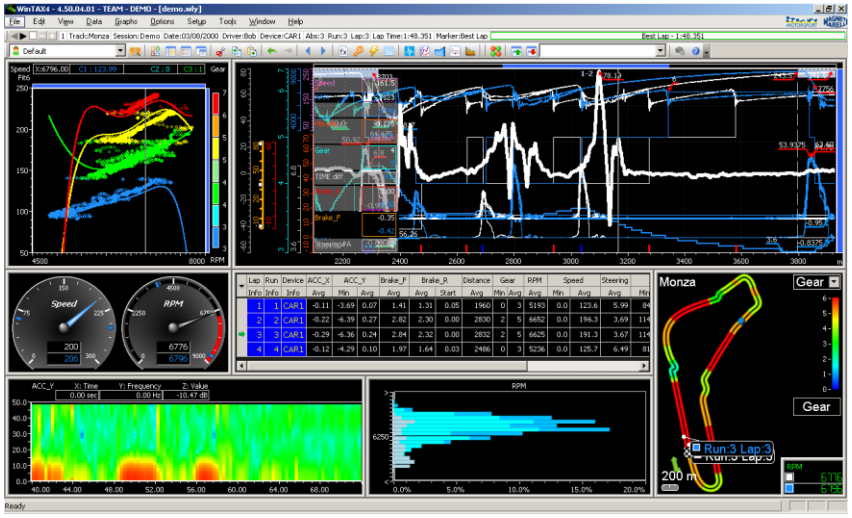
Road Map

The Internet of Things roadmap

(Source : Technologies & Sensors for the Internet of Things, Yole Développement, June 2014)



Racing Industry



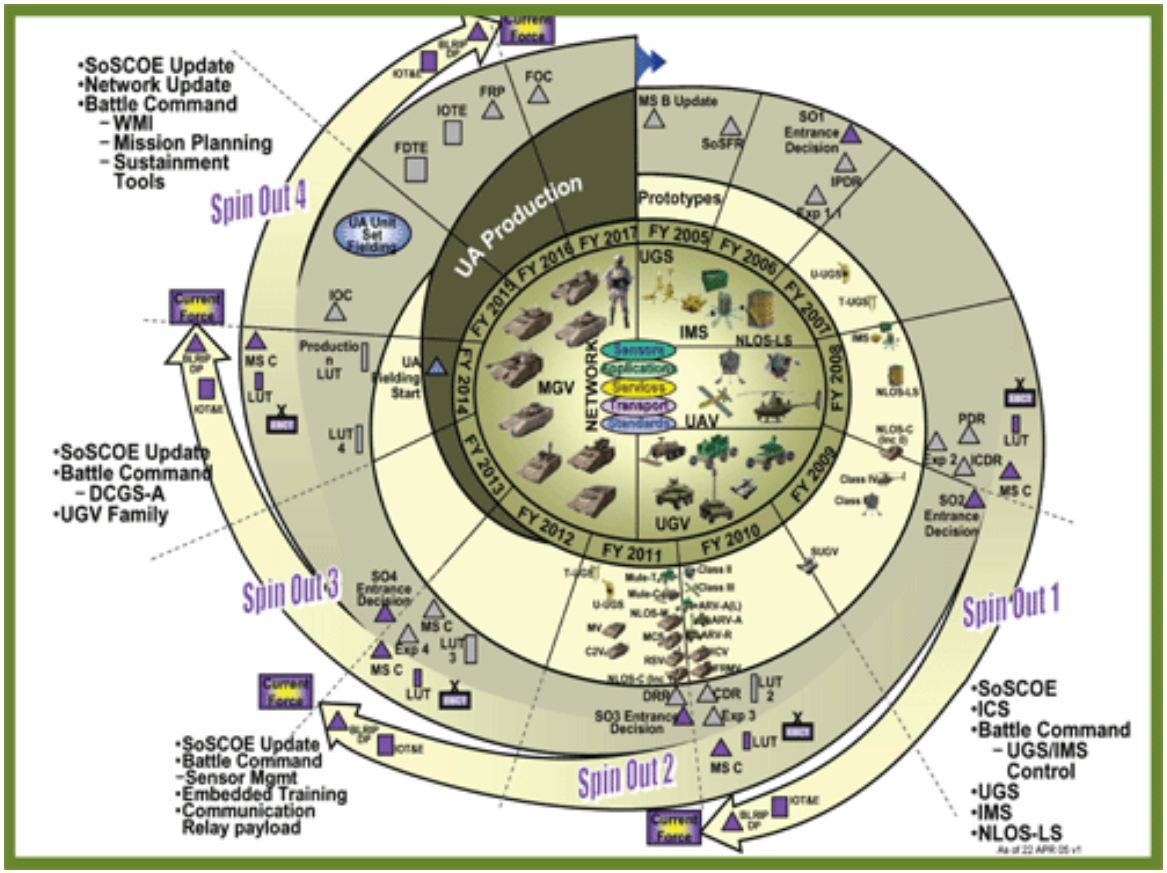
2007 Award Recipient

Fire Control & Weapon Systems

Sensor Integration

Warfighter Systems of Systems

Shift to Automation



COTS Journal 2005

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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Sensor Integration

On Platform

-Self contained situational awareness
- Automation of meteorological data
- Round detection and inventory
- Tube wear monitoring and tracking
- Error tracking
- Real time aiming corrections
- System status and feedback

Sensor Integration (cont)

Warfighter System of Systems

- Health monitoring and reporting
- Environmental monitoring
- Friend vs Foe
- Weapon status
- Access to multiple battle field views (video / sensor / platform)

Shift to Automation

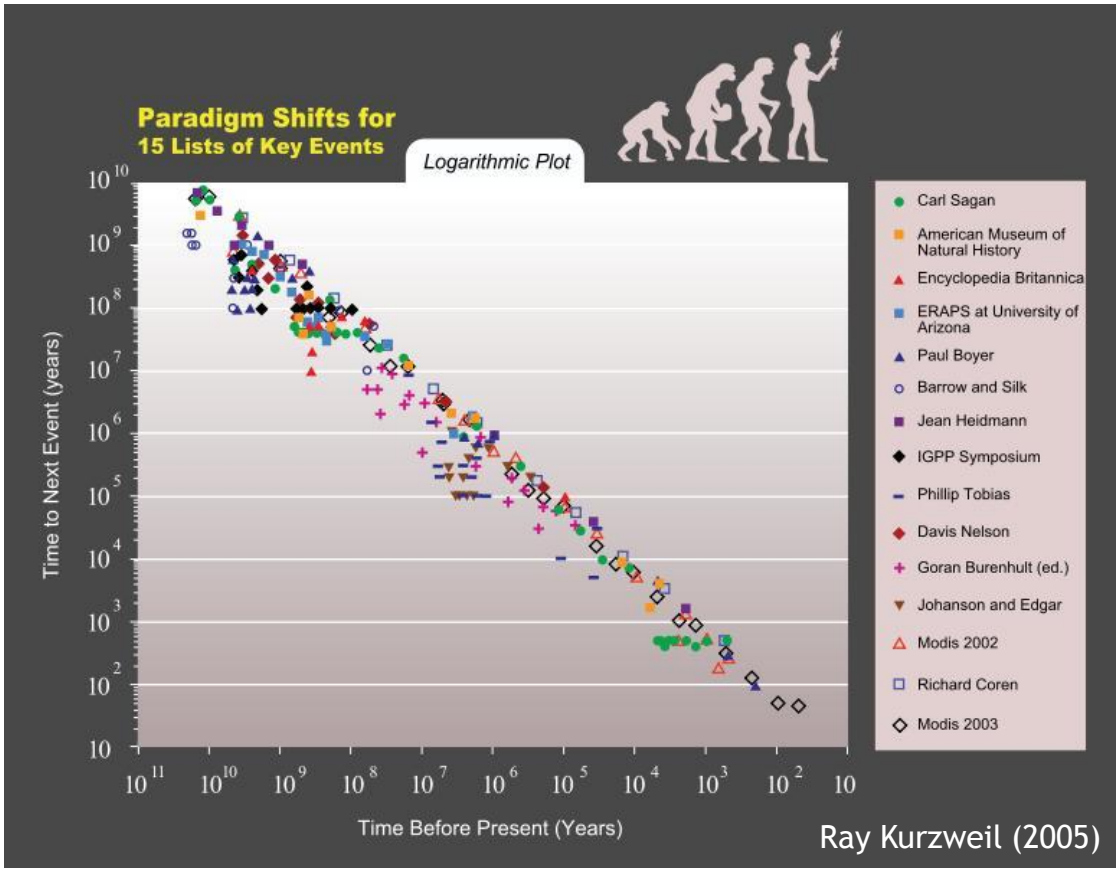
Integration of Artificial Intelligence

- Target Identification / Classification / Prioritization
- Conducting pattern recognition and extrapolation

Integration of Autonomous sensor platforms

- Unmanned Vehicles
- Ground Sensors
- Autonomous Robotic Platforms

Singularity



Ray Kurzweil (2005)

2060-65 ± 10 years

(The Futurist, 2009)

	Year of Singularity	% of 2009 World GDP Subject to Impact of Computing		
		1	1.5	2
% Rate of Increase in Impact of Computing share of Economy	6	2075	2068	2063
	7	2066	2060	2056
	8	2059	2054	2050

Questions

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Abstract

Title: Effect of the Internet-Of-Things on Fire Control and Weapon Systems

Briefing Type: Oral Presentation/Presentation Charts

Authors: Ralph Tillinghast, Mike Wright and Tom Nealis

Abstract:
As the growth of the Internet-Of-Things (IoT) takes hold throughout the commercial market, it's effects will begin to be felt more and more on military applications. This paper will present an overview of the current state of the IoT and projected growth through all market places. Based on this understanding a more in depth discussion will be presented on the role of IoT for fire control and weapon systems in general. To accomplish this, the paper will further describe current cutting edge technologies utilizing IoT concepts in today's fire control systems, along with IoT technology roadmaps for future fire control and weapon applications. Overall this presentation is meant to provide the audience with an understanding of growing field of IoT and its current and future role in fire control and weapon systems.