

# Digital – The Next Frontier

The Internet of Things (IoT), Artificial Intelligence (AI) and the Future of Project Management

1

## Professional Development Day

Presenter: Jeff Freeman [jfsuccess2@gmail.com](mailto:jfsuccess2@gmail.com)

September 28, 2019





# Who am I, Why am here

-John Stockdale, 1992



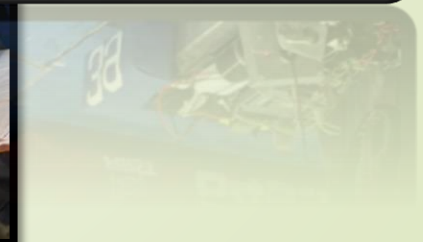


# Who am I, Why am here

-John Stockdale, 1992



## Co-Founder – Non Profit Innovos Robotics





“The key to success is often the ability to adapt”

# Milton





# Change is here.....

7

## Digital Transformation and Disruption

Digital transformation is the profound & accelerating transformation of business activities, processes, competencies & models to fully leverage the changes & opportunities of digital technologies & their impact across society in a strategic & prioritized way.

A word cloud centered around the words "DIGITAL" and "TRANSFORMATION". Other prominent words include "Innovation", "Cloud", "Business", "Future", "Competence", "Paperless", "Opportunities", "Aligned", "Leverage", "Application", "Technology", "Change", "Embracing", "Connected", "Society", "Mobile", "Integrate", "Global", "Analytics", "Use", and "C".

# Disrupted Business Models

8



RadioShack.

 **BlackBerry.**



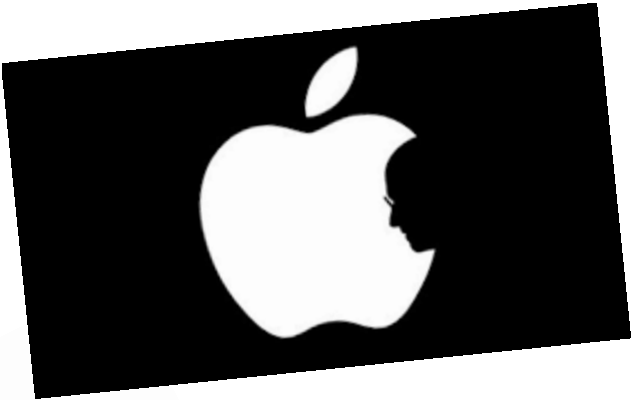
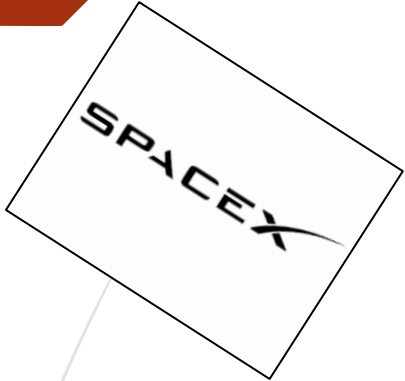
**BORDERS**

**NOKIA**





# “The Disruptors”



# Adapting Organizations

10



## Quick Adapting Organizations

Organizations that succeed in this age of disruption are those that adapt rapidly to new opportunities and challenges.

## Stronger Customer Relationships

Forward-thinking organizations are building better products and creating stronger customer relationships with a speed that hasn't been seen before.



What Kind of **INNOVATOR**  
are YOU?



LEADERSHIP NOW

In this time where disruption is the norm, organizations that succeed are those that adapt rapidly to new opportunities and challenges. **These innovators are changing the way they act, think, and work.**

## DISRUPTIVE TRENDS:

- At any given time, there are several disruptive trends that change the way organizations work
- Smart organizations view the change as an opportunity to innovate and develop new products and services



- **Voice-driven software**
- **Building information modeling (BIM)**
- Advanced robotics
- **3D printing**
- Blockchain
- Autonomous (self-driving) vehicles
- Large-scale energy storage
- **Gene sequencing**
- **Genomics**



# DISRUPTIVE TRENDS:

## Big 5 Digital Disruptors USED FOR COMPETITIVE ADVANTAGE



**Security**

1G	2G	3G	4G	5G
1981	1992	2001	2010	2020(?)
2 Kbps	64 Kbps	2 Mbps	100 Mbps	10 Gbps
Basic voice service using analog protocols	Designed primarily for voice using the digital standards (GSM/CDMA)	First mobile broadband utilizing IP protocols (WCDMA / CDMA2000)	True mobile broadband on a unified standard (LTE)	'Tactile Internet' with service-aware devices and fiber-like speeds
				

# The “5G” Race is on



**China**

**Huawei**



**Finland**

**Nokia**



**Korea**

**Samsung**



**Sweden**

**Ericsson**



**US**

**Verizon; ATT; T-Mobile; Sprint**

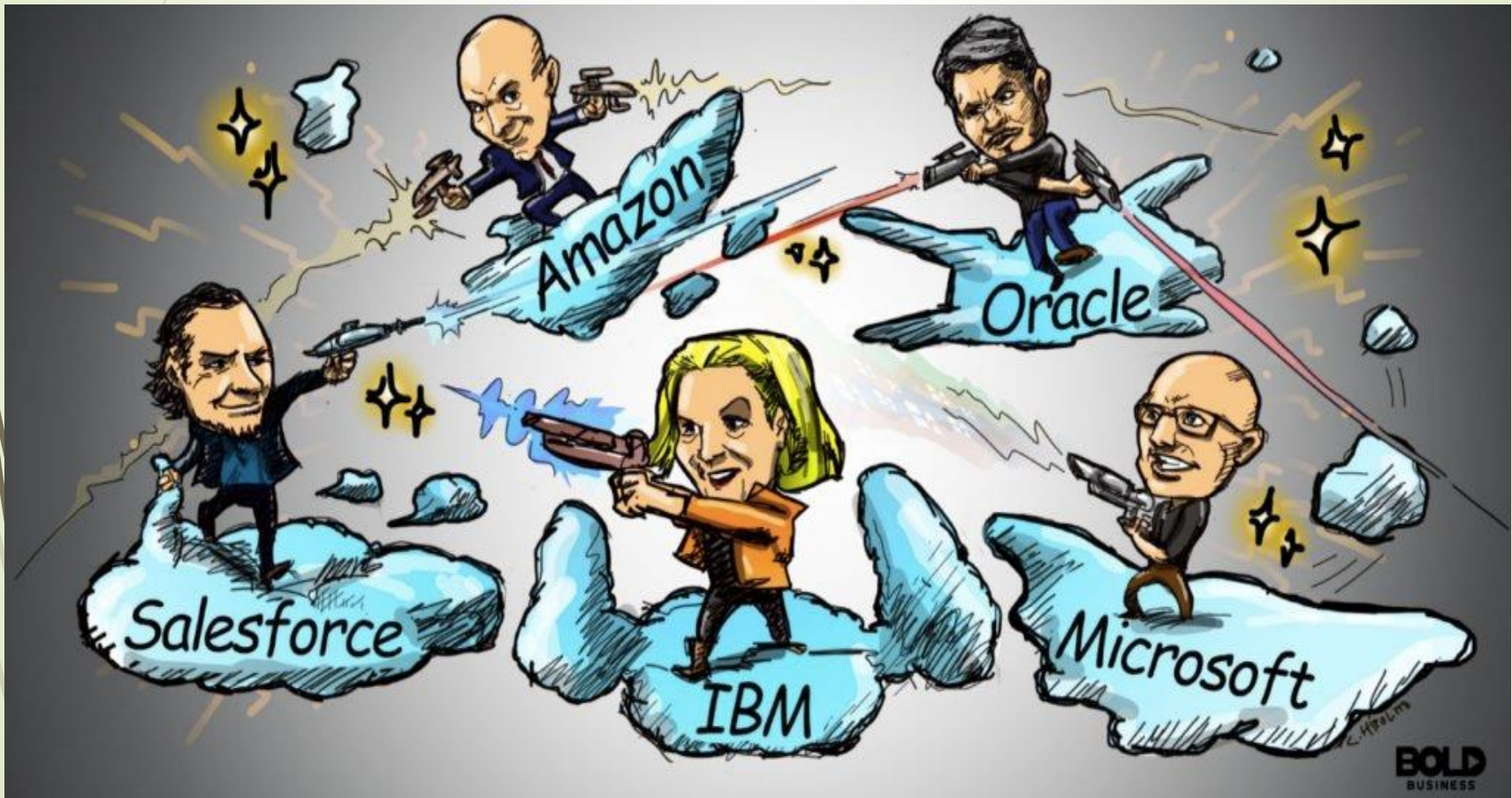
Life Changing - From autonomous vehicles, smart medical procedures,

<https://www.lifewire.com/5g-availability-us-4155914>



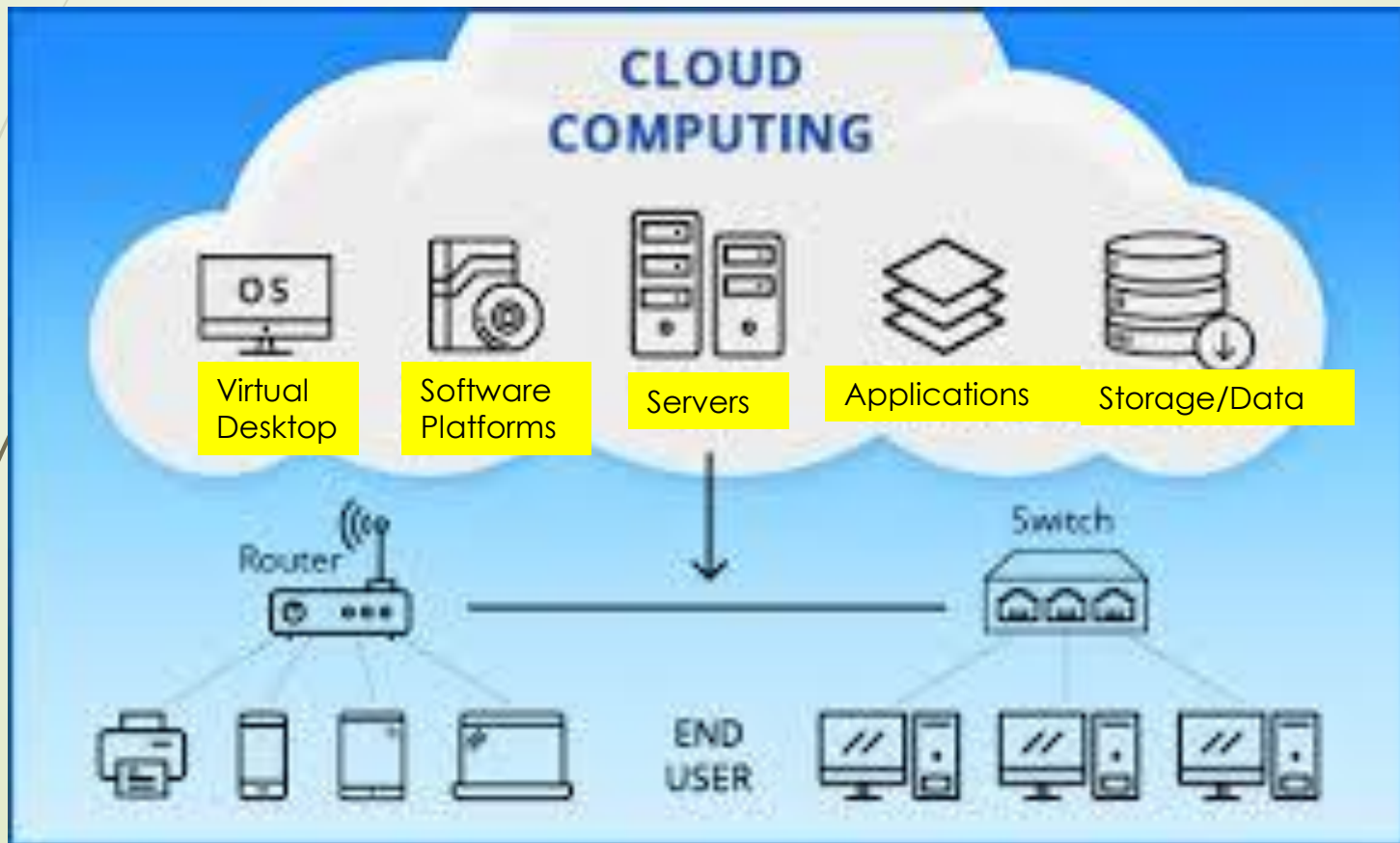
# Cloud Computing

Cloud computing is a **service**, which offers customers to work over the **internet**. It simply states that cloud computing means **storing** and **accessing** the **data and programs** over the internet rather than the computer's hard disk.



# Cloud Computing

Cloud computing is a **service**, which offers customers to work over the **internet**. It simply states that *cloud computing means storing and accessing the data and programs over the internet rather than the computer's hard disk.*



# Anything as a Service

17





The term “**big data**” can be defined as **data** that becomes so **large** that it cannot be processed using conventional methods.



18

## Every 60 seconds



**Facebook generates 4 new petabytes of data per day**

**1 Petabyte=1 Million GBs**

# Big 5 Digital Disruptors



The Future of Project Management

# INTERNET OF THINGS

# IoT

edureka!

A central illustration of a smartphone with a glowing blue house icon on its screen, representing a smart home. The phone is surrounded by a complex network of glowing blue lines and various IoT-related icons, such as a car, a house, a person, and a gear, all set against a dark blue background with a light blue gradient.



# What is IoT?



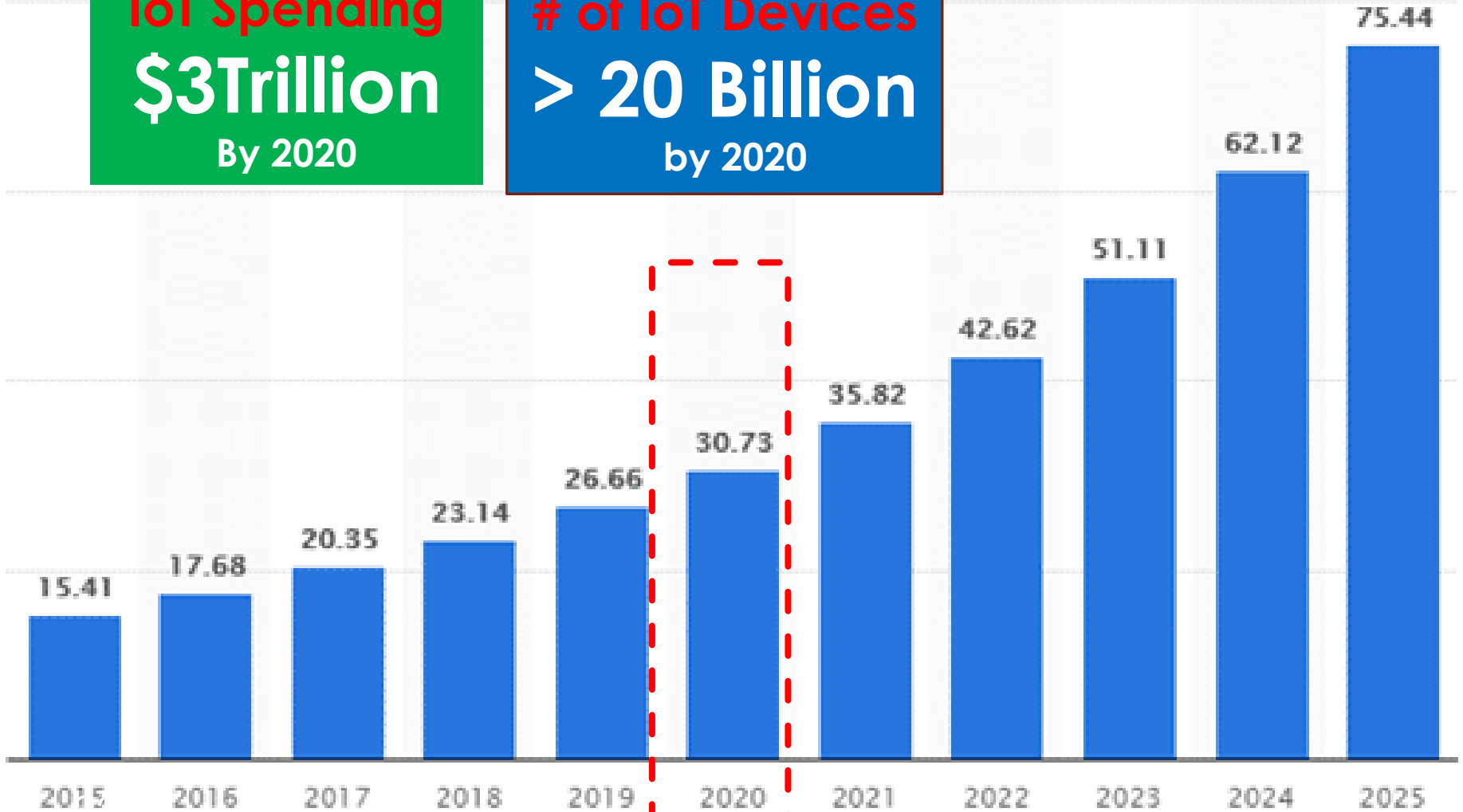
The Internet of **Things** (IoT) is the **network** of **physical objects** or "things" **embedded** with electronics, software, **sensors**, and network **connectivity**, which enables these objects to **collect** and **exchange** data.

# How Many IoT devices and how much spending



**IoT Spending**  
**\$3Trillion**  
By 2020

**# of IoT Devices**  
**> 20 Billion**  
by 2020



# From Dumb to IoT



Dumb Device



- Manually operated
- No Automation
- Not Connected

Smart / not connected



- Provide some level of automation and can be programmed for some specific use
- Not Connected

Connected / Not IoT



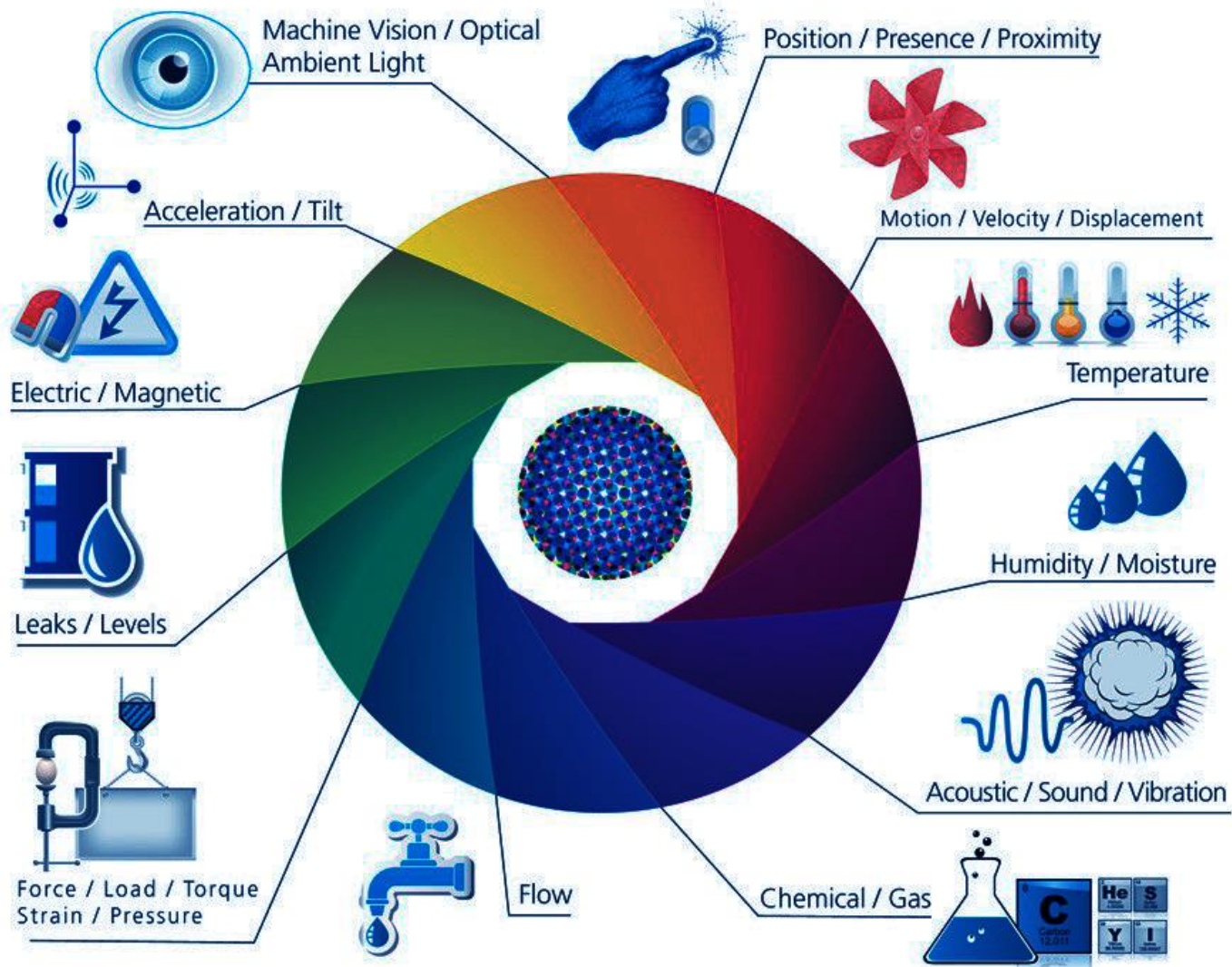
- Remotely controlled and monitored.
- Mobile app on your mobile can be used to connect the device.
- You can brew your coffee by giving instructions from your mobile phone and once the coffee is ready you will get notification.

IoT Device



- Communicates with other devices in the network
- Monitors and manages all aspects of brewing while staying connected to the Cloud.
- Can connect with Alexa to order more coffee
- Via AI, it can suggest other flavors based on coffee drinking patterns

# IoT Sensors

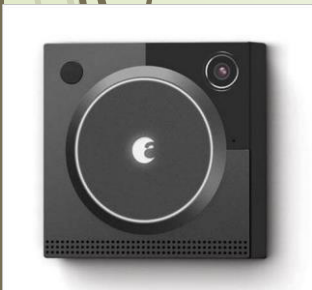
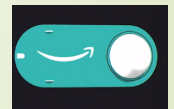
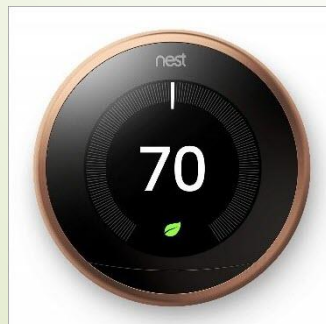
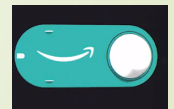




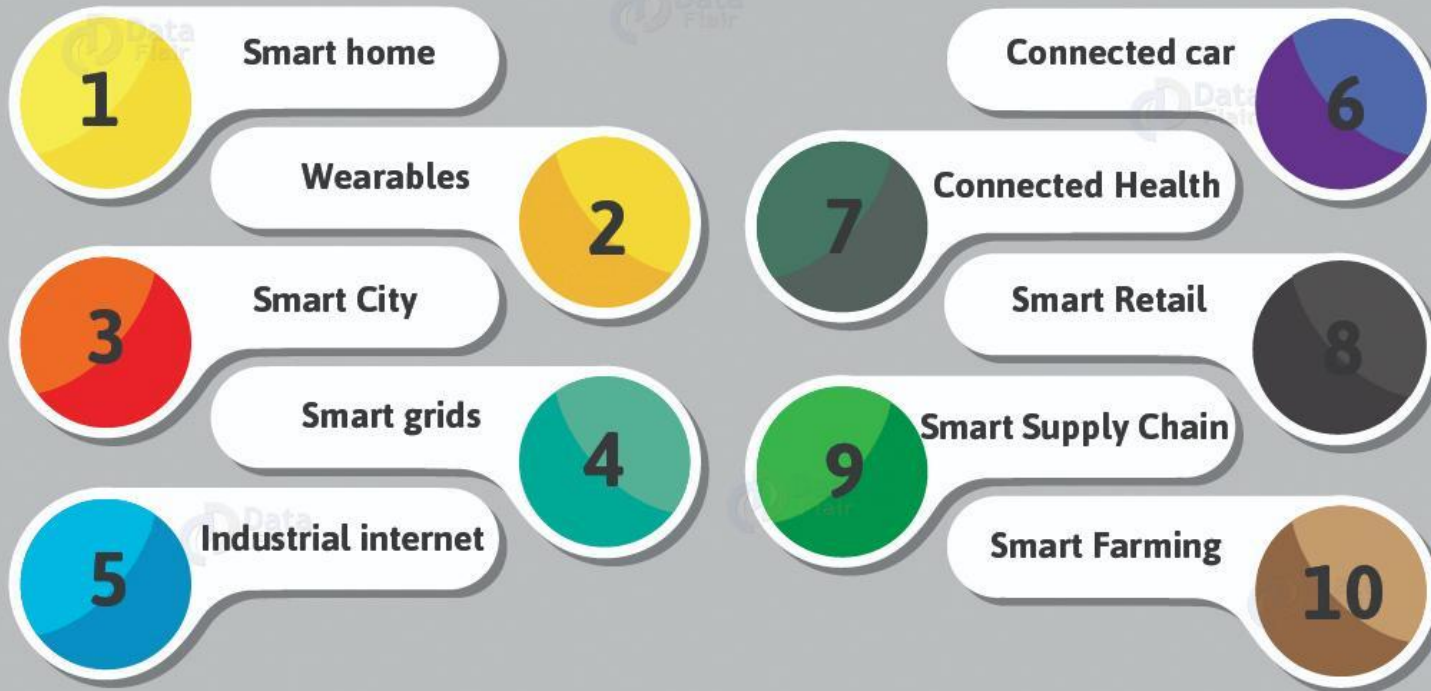
## Examples of IoT devices?

25

**Answer:** There are several top devices in the market. Smart Mobiles, smart refrigerators, smart watches, smart fire alarm, smart door lock, smart bicycle, medical sensors, fitness trackers, smart security system etc., are few examples of IoT products.



# IOT Applications and Usecases

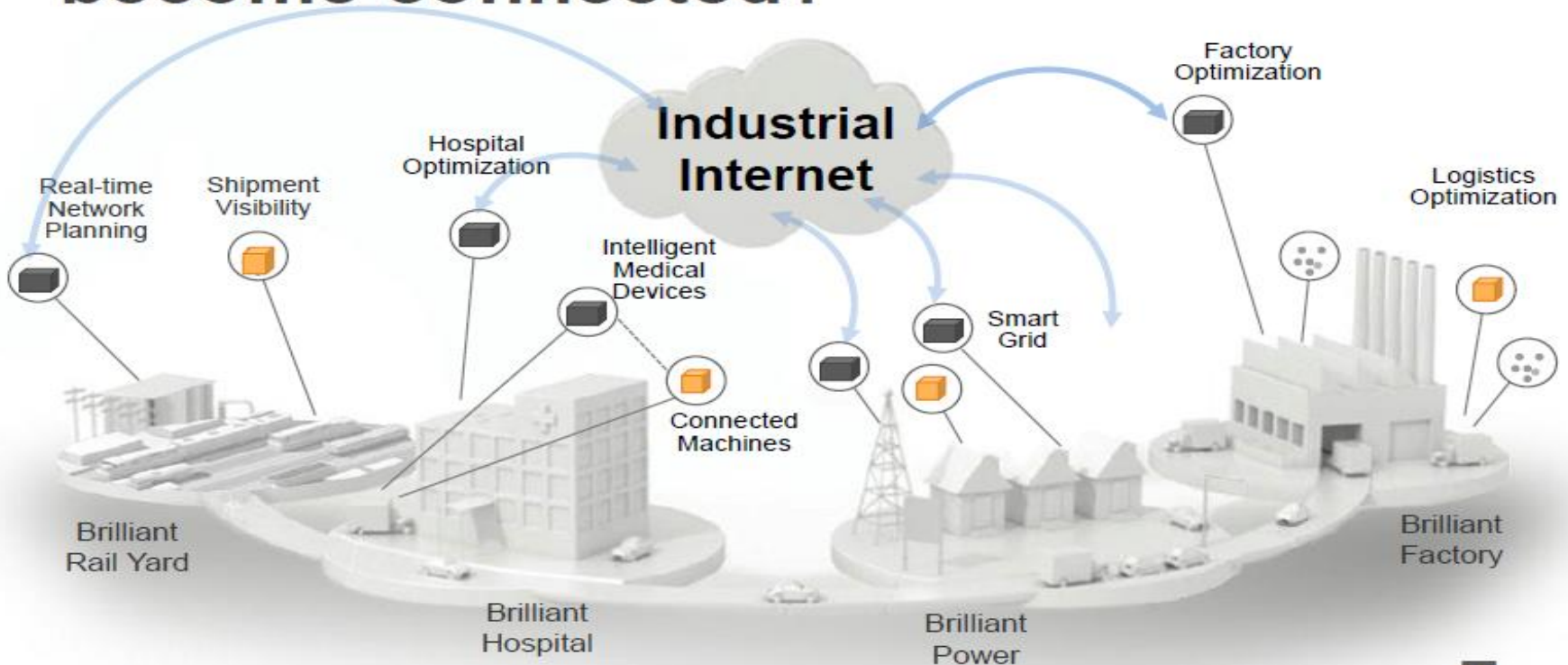


# The Future of IoT



27

## What happens when >20B Machines become connected?



[ OT is virtualized..... Analytics become predictive..... Employees increase productivity  
Machines are self healing & automated..... Monitoring and maintenance is mobilized ]

6



© General Electric Company, 2014. All Rights Reserved.

**"The Sky's not the limit. It's only the beginning with IoT."**

# Project Management and IoT



28

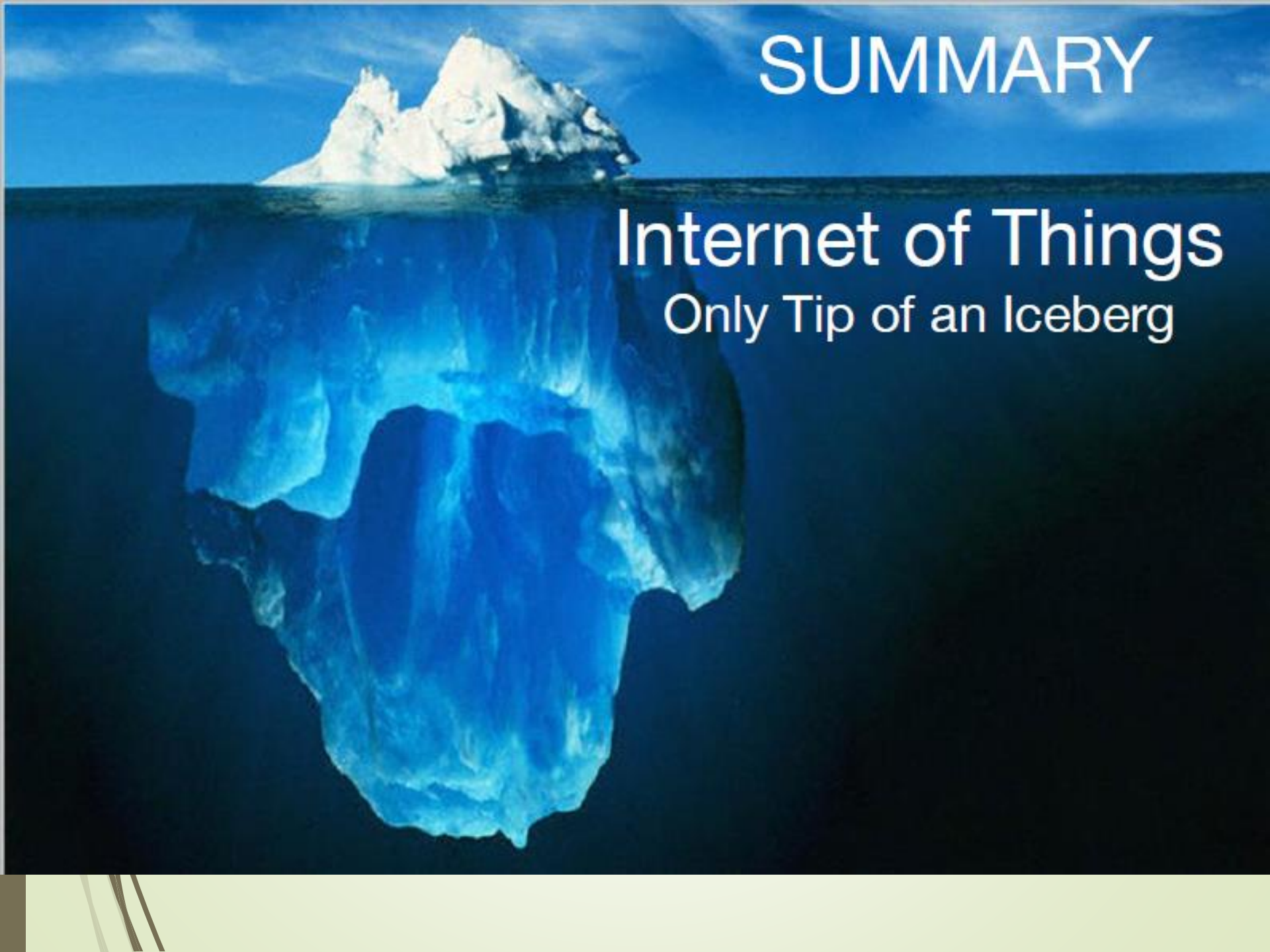
**Project managers** across all relevant segments would do well to **re-examine** their role as well as the changing dynamics of projects before IoT inevitably becomes commonplace.



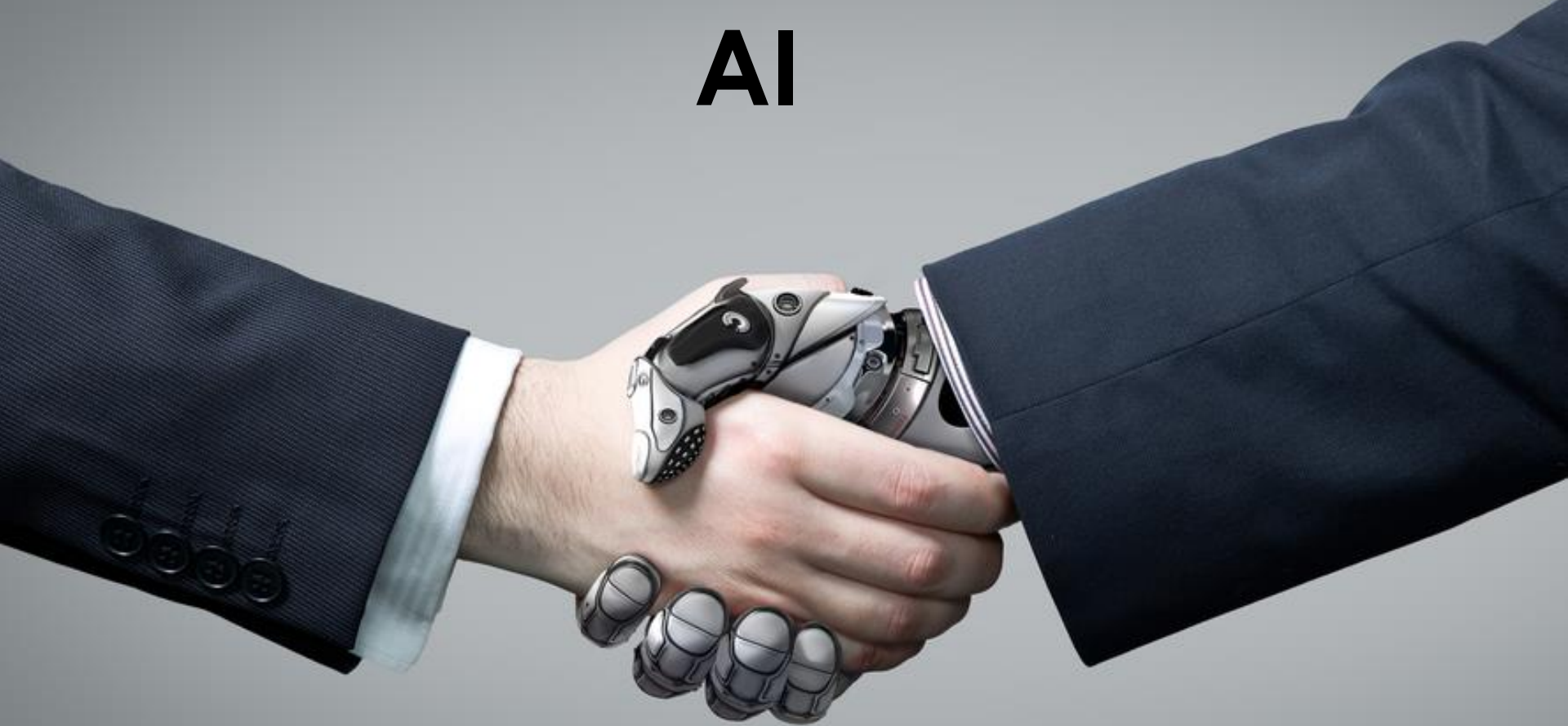


# SUMMARY

Internet of Things  
Only Tip of an Iceberg



# AI



# List of PM things Jeff doesn't like to do

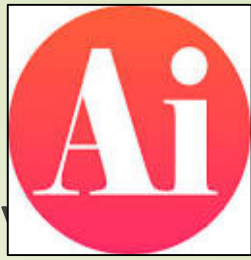
- Archiving Documents - update Box or Doc exchange
- Copying action items from Notes to RAID logs
- Purchasing/Procurement
- Status Reports/Dashboard to Executives
- Status Reports to team
- Impromptu reports
- Requesting appropriate resources
- Taking notes during the meetings
- Documenting Minutes/Notes
- Documenting Minutes/Notes from a recording
- Creating contact list for project team and customer

- Setting up and coordinating meetings
- Reports
- Resource requests
- Updating Risk Register
- Updating Issues list
- Updating Actions list
- Updating Decisions list
- Cost Forecast
- Revenue Forecast
- Schedule Meetings
- Manage Vendors
- Understanding the product or service





# What is AI



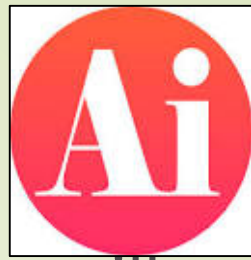
33

Artificial intelligence is an umbrella term for technology that goes beyond routine calculations into deep levels of analysis that only humans could accomplish until now.



A lot of confusion about AI derives from science fiction—when we think “intelligent,” we think “humanlike.” But that hasn’t been the evolution of AI to this point, nor will it be.

# Artificial Intelligence will wipe out PM jobs.... Really??



34

Gartner predicts that by 2020, Artificial Intelligence will have wiped out 1.8 million jobs.

However, it would also be responsible for the creation of 2.3 million new jobs.

Meaning that in effect, the rise of AI would create more jobs than it would eliminate.

Gartner also projected that by 2030, 80 percent of that tasks involved in project management will be eliminated. Things like data collection, tracking and reporting will be taken over by AI

In a broad sense, both enterprises and consumers have been using artificial intelligence for decades.



Voice-to-text and virtual assistants, like Siri or Cortana

---



Credit card fraud detection



Entertainment recommendation algorithms

---



Estimated meal-delivery times

## The IoT and AI combine into a powerhouse of actionable information



36



- For Project Management – AI is most notable in project management software
- Artificial intelligence is slowly making its way into project management tools:
  - [Aurora](#), [Clarizen](#), [ClickUp](#), [Forecast](#), and [Rescoper](#).



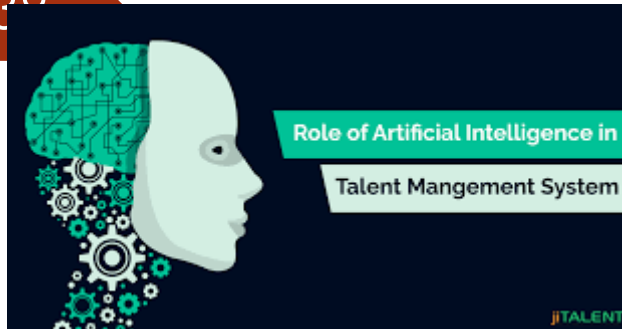
# List of PM things Jeff doesn't like to do

- Archiving Documents - update Box or Doc exchange
- Copying action items from Notes to RAID logs
- Purchasing/Procurement
- Status Reports/Dashboard to Executives
- Status Reports to team
- Impromptu reports
- Requesting appropriate resources
- Taking notes during the meetings
- Documenting Minutes/Notes
- Documenting Minutes/Notes from a recording
- Creating contact list for project team and customer

- Setting up and coordinating meetings
- Reports
- Resource requests
- Updating Risk Register
- Updating Issues list
- Updating Actions list
- Updating Decisions list
- Cost Forecast
- Revenue Forecast
- Schedule Meetings
- Manage Vendors
- Understanding the product or service

# Tools are using AI to automate many existing project management tasks:

39



matching talent to tasks



Providing a hub for knowledge management

- infer insights to make process recommendations
- Unveil team insights,
- make project decisions
- AI can help reduce human error and biases when it comes to creating budgets, predicting cost overruns, and developing schedules.

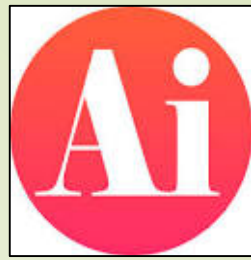


Automate daily PM tasks



Creating reports with untiring objectivity

# PM Software will be the AI platform for PMs



39

- Project management software will be a knowledge base of how to plan, track and manage projects.
- The software will help the project manager find the best path to get optimal results.
- The software will warn about impending problems and will give multiple options on how to fix those problems
- The software will incorporate issues and risks in the planning of projects
- It prepare plans in case certain risks become the project's reality.



PrepHub  
Freshdesk

Scoro

Flock

40

Workzone

LiquidPlanner

MoneyPenny.me

Zoho Projects

GanttPRO

Basecamp

Wrike

Asana

Functionfox

Monday.com

nTask

Podio

Workbook

Redbooth  
Project Insight

Teamwork Projects

Celoxis

10,000FT Plans

# Top Project Management Software

Mavenlink

ProjectManager.com

ClickUp

Clarizen

EventCollab

Insightly

Comindware

Advantage

Redmine

Easy Project

Crocagile

Paymo

Teamdeck  
Cage

Nutsache  
Producteev

Notion

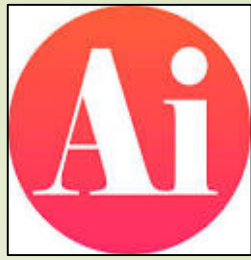
Freed

Hive

Smartsheet

Avaza





Top



Wrike



Jira Software



asana



smartsheet

monday.com

Trello



Basecamp

clarizen



# The Future of Project Management or The PM of the Future

42



# Project Managers Adapting to Digital Disruption

43



## Awareness

Be aware of the emerging technologies



Use the technologies to be more efficient and proficient



Seek employment opportunities or new project opportunities in the digital transformation areas



## Skillset Adaptation

Identify and learn new skillsets and abilities to conform to the digital technologies



Immerse yourself into "Big 5" projects, if possible. Look for projects with the words "Cloud", "Connected", "Big Data", "IoT"

# Project Leaders Need to Adapt to this Digital Disruptive World



Project leaders continue to need

- technical and project management skills
- leadership skills
- and strategic and business management skills,

Add Digital Skills to the PMI Talent Triangle

- Add a new digital overlay to the PMI Talent Triangle® to emphasize how digital transformation is impacting every aspect of our work.
- New digital skills are most important for the evolving role of those who manage projects.



# Project Management Digital Skills

45

When we think of digital skills, we often think of computer-oriented tasks such as coding or using software skills effectively. But building a truly digital skill set that enables success in today's digital environment requires the combination of skills

## THE TOP SIX DIGITAL-AGE SKILLS FOR PROJECT DELIVERY

When asked which skills are most important in building a truly digital capability for project leaders, HR professionals in innovator organizations said the following combination of skills were most important.



# Invest to Get the Digital Skills

## Are You Ready?

The most forward-thinking organizations rely on the power of project leaders to capitalize on all opportunities generated by technological disruption. One big competitive edge: Project leaders are ready, willing, and able to help their organizations not just survive, but truly thrive, in the face of massive change.

Yet, innovator organizations realize that project leaders with the right digital-era skill sets do not occur by happenstance. Innovators know they must invest in three key areas:

### SKILLS, TRAINING, AND DEVELOPMENT



Innovator organizations help their project leaders build the digital-age skills they need for project delivery: Data science, an innovative mindset, security and privacy knowledge, legal and regulatory compliance knowledge, the ability to make data-driven decisions, and collaborative leadership.

### TOOLS AND APPROACHES



Innovators invest in the latest tools and technologies to enhance the interaction of their people and teams. And they're embracing the entire value delivery landscape to deliver projects and programs in ways that minimize risks, control costs, improve speed to market, and add value.

### CULTURE



Innovators create a culture that views disruption not as a threat—but as an opportunity.

Continuous disruption is the new normal. And laggard organizations that are slow to adapt and advance their project leaders risk being left behind—or worse, completely shut out. Innovators aren't about to let that happen. They're adapting next practices to best practices to gain a competitive edge.

Are you ready to be an innovator?

# Super Project Manager – The PM of the Future

## Are you Ready?



Leadership; Technical and Project Management; Planning; Time Management; Risk Management; Negotiation; SME

### THE TOP SIX DIGITAL-AGE SKILLS FOR PROJECT DELIVERY

When asked which skills are most important in building a truly digital capability for project leaders, HR professionals in innovator organizations said the following combination of skills were most important.



1. Data Science Skills
2. Innovative mindset
3. Security and Privacy Knowledge
4. Legal and Regulatory Compliance
5. Ability to make Data Driven Decisions
6. Collaborative Leadership Skills



1. Skills, Training and Development
2. Tools and Approaches
3. Culture

- Awareness**  
Be aware of the emerging technologies
- EFFICIENCY**  
Use the technologies to be more efficient and proficient
- OPPORTUNITY**  
Seek employment opportunities or new project opportunities in the digital transformation areas
- Skillset Adaptation**  
Identify and learn new skillsets and abilities to conform to the digital technologies
- IMMERSION**  
Immerse yourself into "Big S" projects, if possible. Look for projects with the words "Cloud", "Connected", "Big Data", "IoT"

- (1) Awareness
- (2) Gain Efficiencies
- (3) Career Opportunities
- (4) Gain Knowledge/upskill
- (5) Immersion into projects

# Don't Be A Milton!



**THANK YOU**



# References

49

Maximizing the Benefits of Disruptive Technologies on Projects

<https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/pulse/maximize-benefits-disruptive-technologies-projects.pdf>

The Project Manager of the Future

<https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/pulse/digital-pm-skills.pdf>

**Disruptive Technology impacting Project Management**

<https://www.liquidplanner.com/blog/pmi-report-the-impact-of-disruptive-technologies-on-project-management/>

I, Project Manager: The Rise of Artificial Intelligence in the Workplace

From <<https://blog.capterra.com/i-project-manager-the-rise-of-artificial-intelligence-in-the-workplace/>>

Women in Project Management

<https://www.teodesk.com/blog/the-future-of-project-management-how-technology-changed-the-game/>

4 Ways IoT Can Affect Project Management

From <<https://www.copperproject.com/2018/07/4-ways-iot-can-affect-project-management/>>

How IoT will Change Project Management

From <<https://project-management.com/how-iot-will-change-project-management/>>

Gartner Says 8.4 Billion Connected "Things" Will Be in Use in 2017, Up 31 Percent From 2016

From <<https://www.gartner.com/en/newsroom/press-releases/2017-02-07-gartner-says-8-billion-connected-things-will-be-in-use-in-2017-up-31-percent-from-2016>>

Cisco

[https://www.cisco.com/c/dam/en\\_us/about/ac79/docs/innov/IoT\\_IBSG\\_0411FINAL.pdf](https://www.cisco.com/c/dam/en_us/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf)

18 Most Popular IoT Devices in 2019 (Only Noteworthy IoT Products)

From <<https://www.softwaretestinghelp.com/iot-devices/>>

Smart, Connected and IoT Based Devices. What's The Difference?