



**Presented at the FIG Working Week 2019,  
April 22-26, 2019 in Hanoi, Vietnam**

# Technical Advances in Land Administration

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# World's Largest Media Company



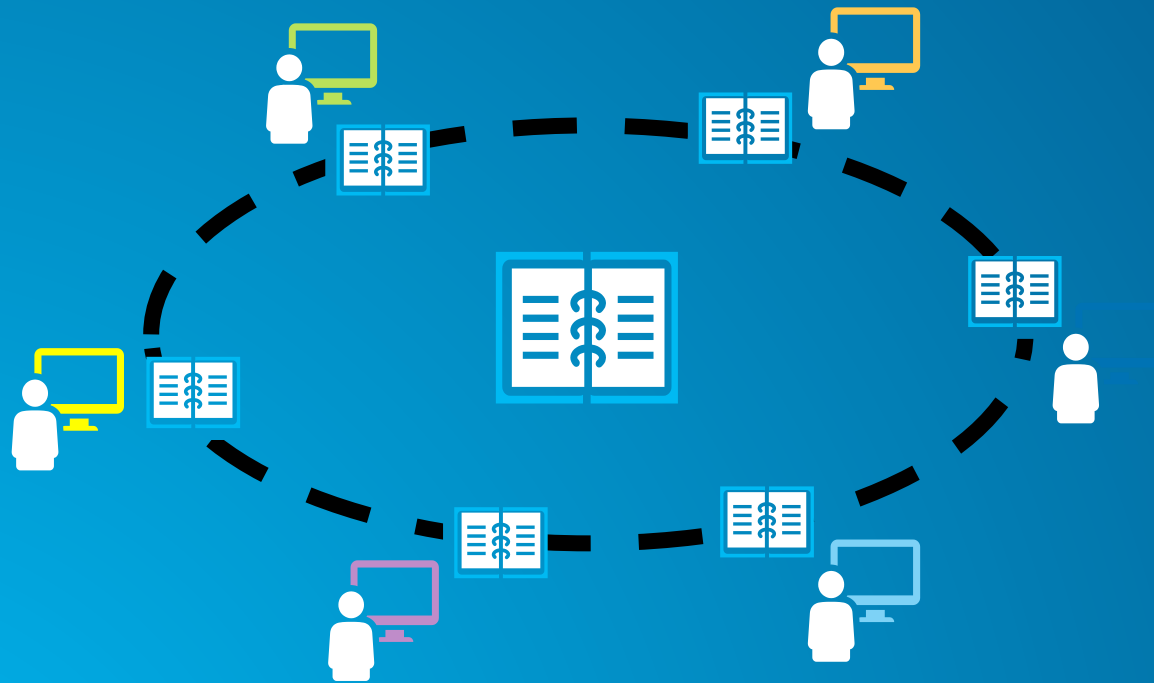
- **No Journalists**
- **No Content Producers**
- **No Photographers**

# World's Largest Hospitality Company



- No Rooms
- No Receptionists
- No Free Breakfast

# World's Largest Database - Blockchain



- **No Operating System**
- **No Infrastructure**
- **No Database Admin**

# World's Largest Currency



- No Vault
- No Tellers
- No Drive-up Window

# Disruption

dis·rup·tion

dis'rəpʃH(ə)n/

*noun*

noun: **disruption**; plural noun: **disruptions**

disturbance or problems that interrupt an event, activity, or process

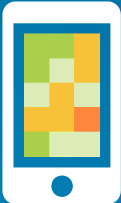
## What Enabled This Disruption?



# Enabling Technology for This Disruption



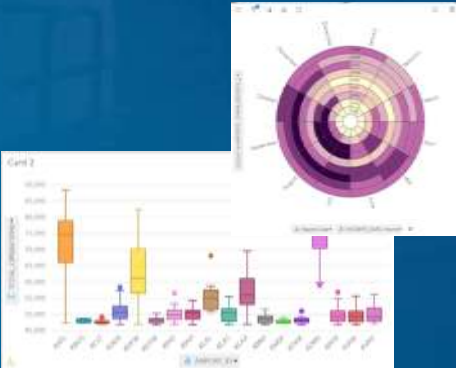
Cloud



Smart Phones



Data



Analysis



Standards



Technical Capacity

What others?



# Components for Disruption

**Opportunity**

**Apathy**

**Technology**

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# Transformation

trans·for·ma·tion

tran(t)sfər'māSH(ə)n/

*noun*

noun: **transformation**; plural noun: **transformations**

a thorough or dramatic change in form or appearance



[www.nationalparks.nsw.gov.au/google-trekker](http://www.nationalparks.nsw.gov.au/google-trekker)



[www.limely.co.uk/google-street-view-cameras-upgrade](http://www.limely.co.uk/google-street-view-cameras-upgrade)



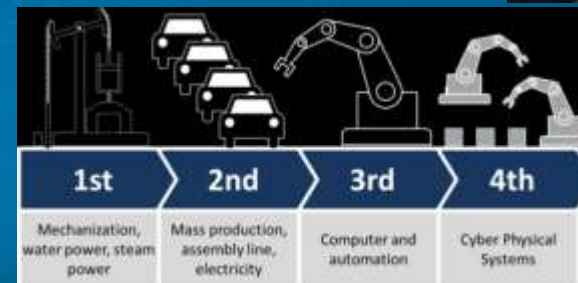
<https://pbs.twimg.com/media/DOld6AxWkAAVPKx.jpg>



<http://www.ros.org/news/2014/03/why-here-mapping-cars-are-basically-cyborgs.html>

# Revolutions.....

- First ~ 1760 - 1820
- Second ~ 1840 - 1914
- Third ~ 1945 - 2000
- Forth ~ 2000 - ?



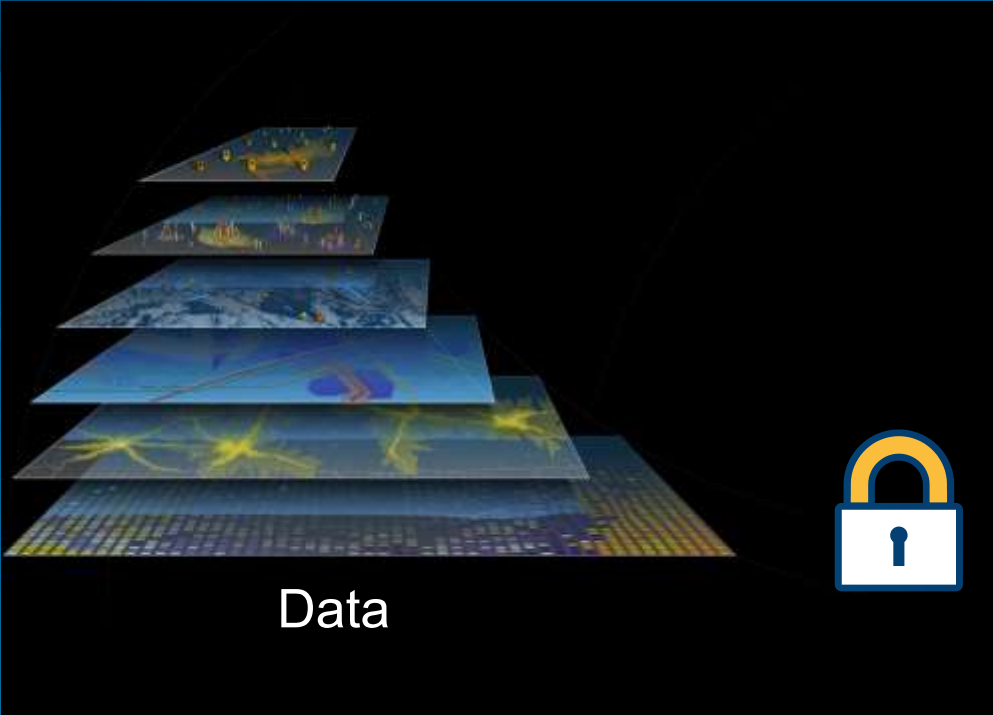
# New Disruptive Technologies



Cloud

# \*aaS

Everything as a Service



Data



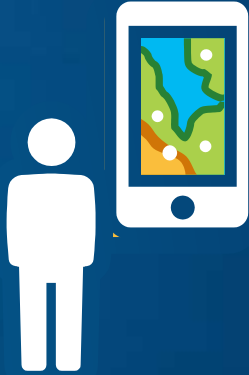
Automatic Feature Extraction



Online Maps



High Accuracy



Crowd

# What's happening in Machine Learning?

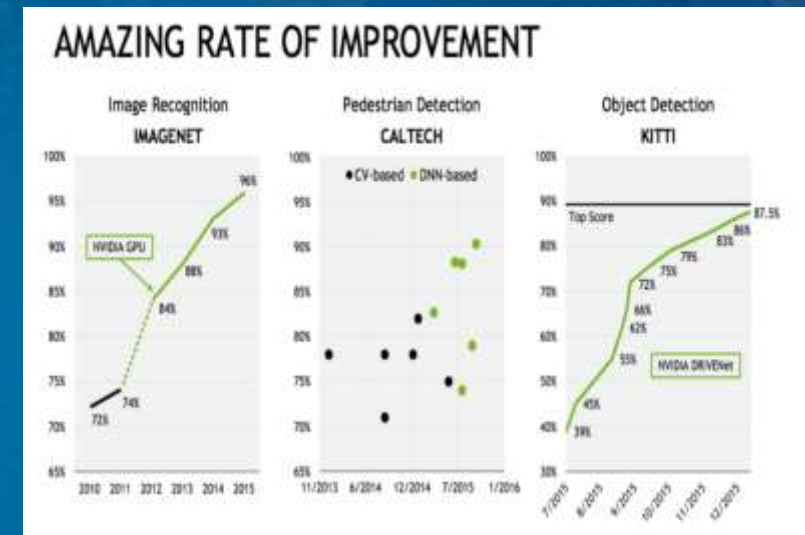
Computing Power



Internet of Things



Algorithms (*Deep Learning*)



*Predictions will be much more Accurate, Fast, and Scalable*



## WILL ROBOTS TAKE MY JOB?

[willrobotstakemyjob.com/](http://willrobotstakemyjob.com/)

# 96%

Surveying and Mapping  
Technicians

AUTOMATION RISK LEVEL

**You are doomed**

or 96% probability of automation

# The Importance of Open


Enables many implementation configurations



Any System

## Open Standards and Formats

WMS GML WCS KML WFS  
IFC SQL WWW  
OPeNDAP SLD SOAP Web Scene (I3S)  
LERC JSON LAS WMTS  
REST WaterML INSPIRE CSW WPS  
NetCDF Shapefiles  
ISO  
GeoPackage  
OneGeology  
CityGML



Many OGC Certifications

## Product Integration

SQL Server  
Adobe Creative Cloud SharePoint  
MS Office Azure AutoCAD  
AWS Netezza Teradata  
IBM Cognos SAP HANA  
Oracle

## Open Software

Open Data Access  
Open APIs & SDKs  
Extensible Architecture  
Embeddable Components  
Open-Source Contributions (500+)  
Open-Source Integration

... An Open, Interoperable, and Standards-Compliant Platform

# Recipe for Survival

- Dos

- Embrace Change
- Learn New Technology
- Do New Things
- Transform
- Disrupt Yourself
- Get Out of Your Comfort Zone
- Stay Current

- Don'ts

- Rely on Regulation
- Be Complacent
- Rely on Traditions
- Stagnate
- Think It Won't Happen to You

