# *The Seven Deadly Disruptors in Healthcare*

Christopher Surdak, JD

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# Welcome!

## Christopher Surdak, JD, President, Surdak & Company

Technology Evangelist, Award-Winning Author, Engineer, Data Guy, Rocket Scientist, and Global Expert in Information Governance, Analytics, Privacy and Social Media

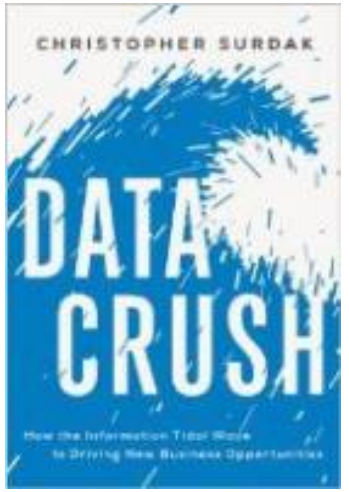
Held roles with companies such as Accenture, Siemens, Dell and Citibank. Began my career with Lockheed Martin Astrospace, where I was a spacecraft systems engineer and rocket scientist.

Hold a Juris Doctor from Taft University, an Executive Masters In Technology Management and a Moore Fellowship from the University of Pennsylvania, a Master's Certificate in Information Security from Villanova University and a BS in Mechanical Engineering from Pennsylvania State University.

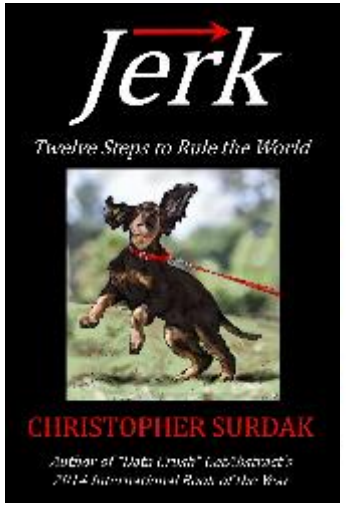
Author of "Jerk: Twelve Steps to Rule the World", and

"Data Crush", published by AMACOM Publishing, GetAbstract's International Book of the Year Award, 2014.

Wharton Club DC's Benjamin Franklin Innovator of the Year, 2015
Information Governance Initiative's Evangelist of the Year, 2015
Honored Consultant, The FutureTrek Community, Beijing, China
Contributing editor and columnist for *European Business Review* magazine







# How Trump defeated Clinton using analytics

Columnist Rob Enderle writes that by following the three rules of analytics Trump won the election.



By Rob Enderle | Follow

CIO | NOV 11, 2016 4:00 AM PT

MORE LIKE THIS ::


The Trump train wreck fueled by confirmation bias


Clinton wins, how analytics cost Trump the election


Just how partisan is Facebook's fake news? We tested it


VIDEO
Changing the customer

# Six Challenges of "The New Normal"

**Quality**: Consumers expect perfection. Deliver less and your customers will abandon you forever.

**Ubiquity**: Globalization means anything, anywhere, anytime. Anything less is unacceptable.

**Immediacy**: Immediate gratification. "There's an app for that" instantly, predictively.

**Disengagement**: Don't build, don't run, don't outsource, don't care. I only buy a result.


**Intimacy**: Customers hunger for other forms of connectedness. Feeling like part of a community will be even more important as our needs are met more anonymously.

**Purpose**: Support customers' need for and sense of purpose.

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# Digital Transformation: What Is It?



Enhancing business outcomes through the effective use of information

A step-change in speed, quality, relevance and value

Applying mobility, social media and analytics in new ways

**Innovation** rather than **improvement**

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# The Four Trinities

| Basis of Power | Distribution | Application | Control |
|---|---|---|---|
| Tools (Knowledge) | Memories | Story Telling | Teaching |
| Dirt (Land) | Heredity | Edict | Violence |
| Analog (Capital) | Bureaucracy | Processes | Rules |
| Digital (Information) | Mobility | Social Media | Analytics |

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# Information is the New Wealth

#1: USA, $19.36 Trillion

#2: China, $11.93 Trillion

#3: Japan, $4.88 Trillion

#4: Germany, $3.65 Trillion

#5: France, $2.57 Trillion

#6: UK, $2.56 Trillion

#7: India, $2.44 Trillion

***$2.783 Trillion***

$511.6 billion

$645.6 billion

$793.6 billion

$107.9 billion

$724.7 billion

# The “Dirty Dozen” of Being a Jerk

*How Jerks do what they do*

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# Digital Transformation and Disruption: “Jerk”

Among many definitions, “Jerk” is the third derivative of the equation of motion… It is a change in rate of acceleration

Systems not designed for jerk are easily destroyed by it

“Digital Disruptors” (FANGSTAU) are Jerks; destroying existing systems and paradigms

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# 12 Steps of Being a “Jerk”

1. Jerks use other peoples’ capital
2. Jerks trade capital for information
3. Jerks focus on context, not content
4. Jerks remove friction
5. Jerks replace value chains with value webs
6. Jerks invert economies of scale and scope
7. Jerks sell with and through, not to
8. Jerks print their own money
9. Jerks flout the rules
10. Jerks “hightail” it
11. Jerks do then learn, not learn then do
12. Jerks look forwards, not backwards


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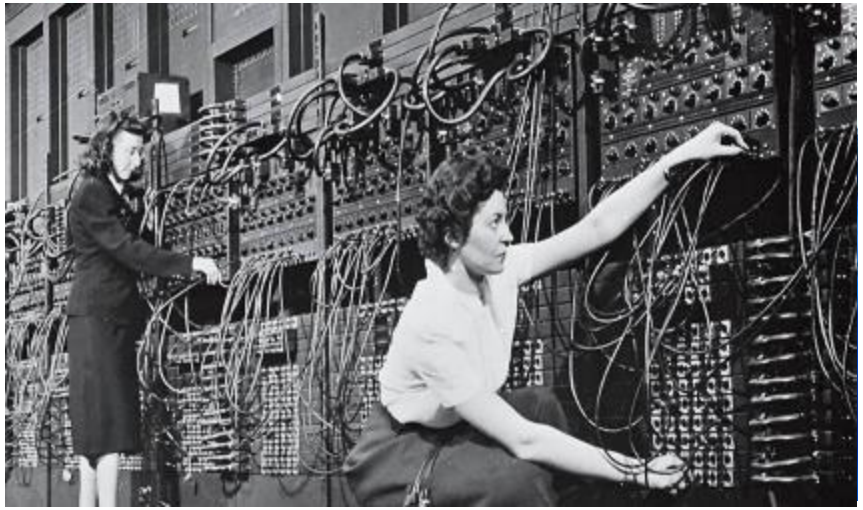
# The
# “Seven Deadly Disruptors”

# Disruptive Technologies

Technologies that change all aspects of human life and society

Fire
Animal Husbandry
Agriculture
Bronze
Glass
Steel
Electricity
Oil
Rubber
Radio
Plastics
Computers



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# 1. Robotics – What is it?

Surgical robots, enhancing human interactions

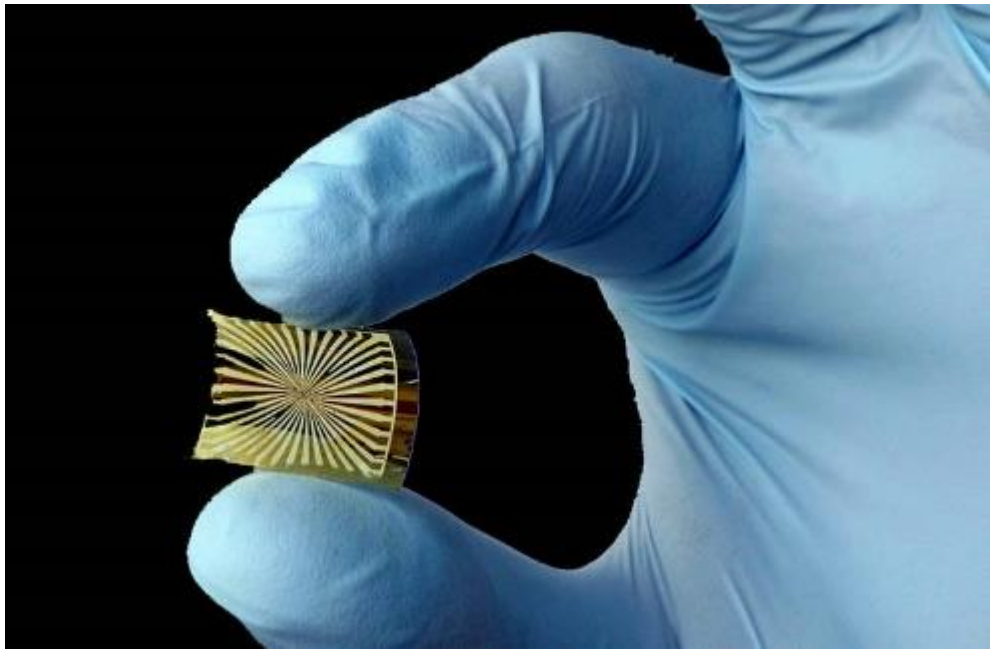
Finer control, greater precision, fault-tolerant and mistake prevention

Human assistance and treatment robots

Drones, providing remote assistance

Self-guided, automated ambulances

Cyborgs; human-machine interfaces



https://youtu.be/aivvwBM5h_Y

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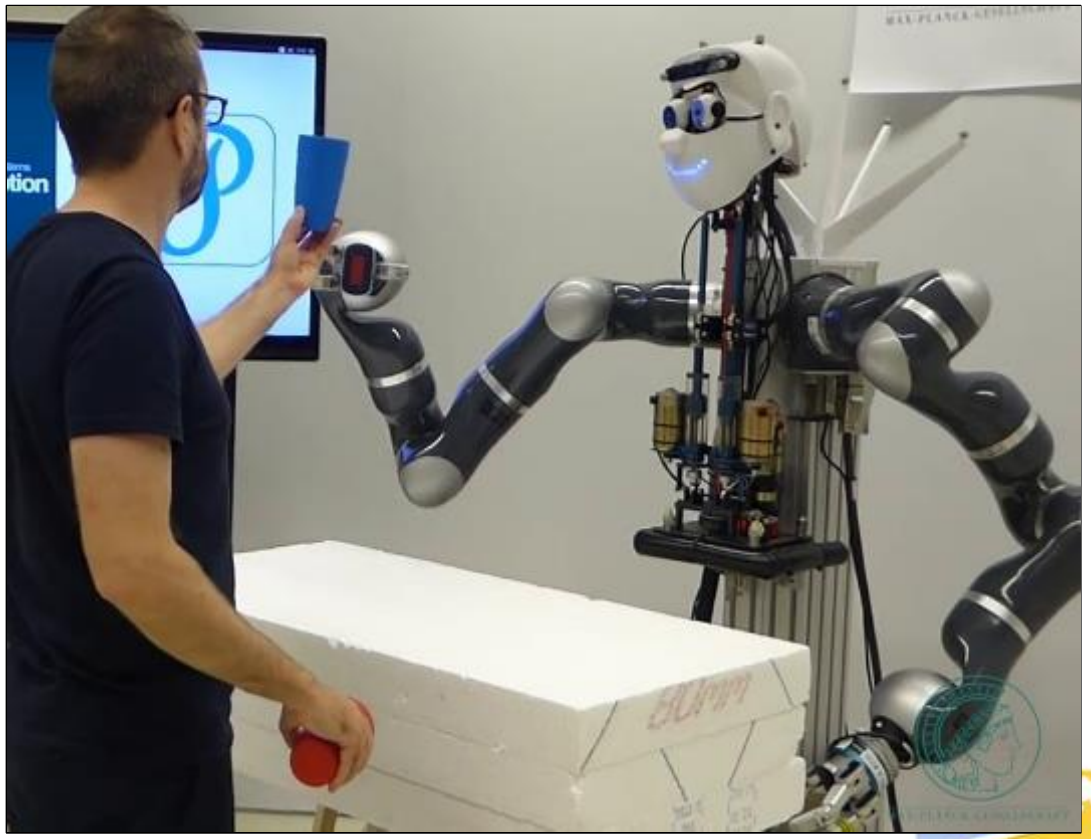
# 1. Robotics – Tactical Implication

Improved outcomes, but significant capital costs

Extreme conservatism of regulatory bodies

Changing patient expectations



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# 1. Robotics – Systemic Implication

Remote delivery of service, freed from the "tyranny of location"; global competition

In-Home care: "Facility of the future" is the patient's home, "Going to the hospital" will be exceptional

Extreme polarization of service: either no-touch or high-touch

Alternate capitalization models for ever-more-expensive technologies


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# 2. Big Data & Analytics – What is it?

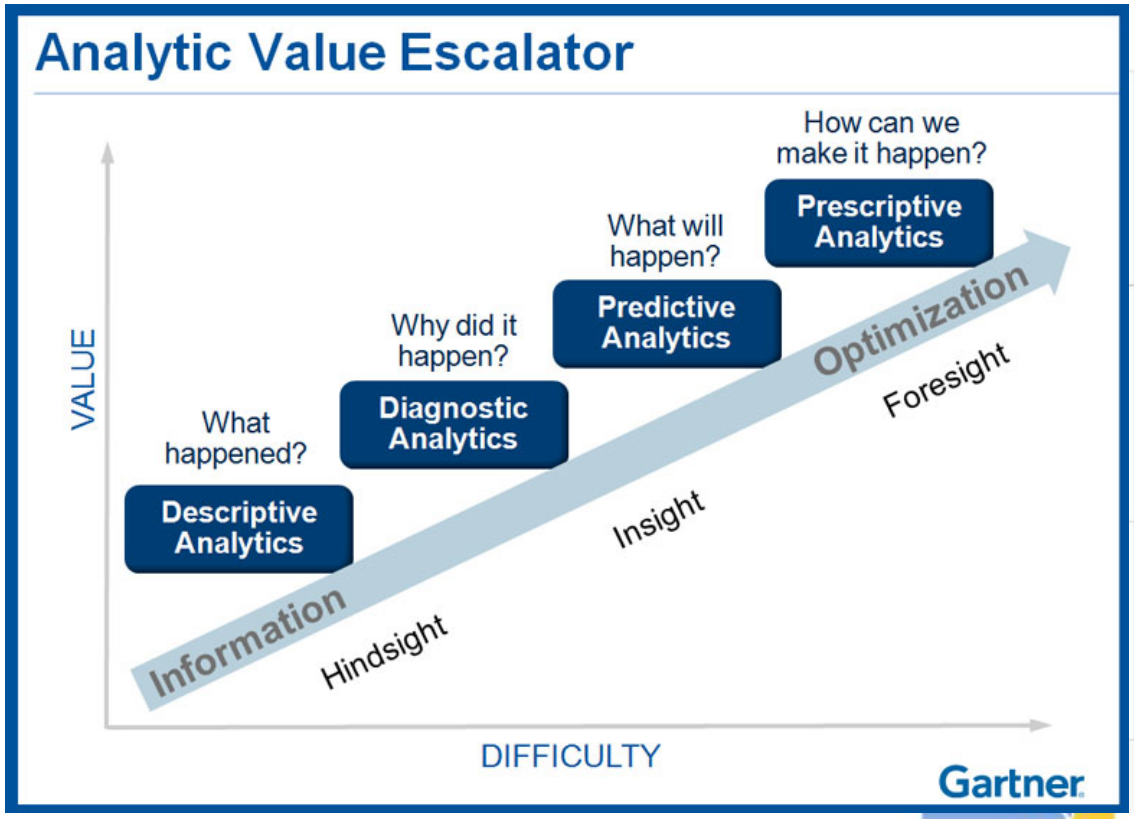
Analysis of large, diverse and fast data in order to find new insights, opportunities and trends

In healthcare, data and analytics at two ends:

Population health to seek macro trends

Individual health to optimize individual treatment

Rapidly moving from insights to outcomes, predictively

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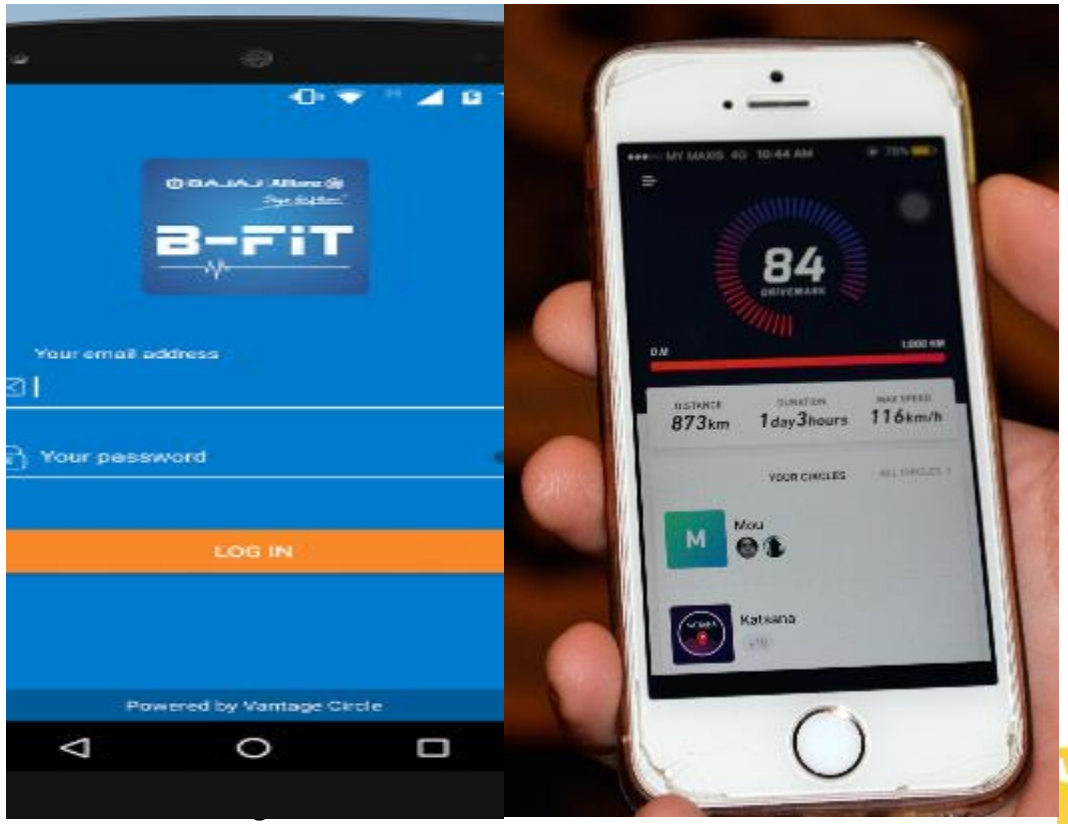
# 2. Big Data & Analytics – Tactical Implication

Genome-based healthcare; costs are falling, correlations increasing, outcomes growing

Ethical dilemmas are a sign of progress (?)

On-demand, event-based insurance, based on genetic and behavioral factors

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# 2. Big Data & Analytics – Systemic Implication

Behavioral analytics: from the carrot…

…to the stick

Predictive analytics gives way to prescriptive and persuasive analytics;

Changing peoples' decisions to get better outcomes

The only thing worse than false-positives…

… may be false negatives


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# 3. Thingification – What is it?

Internet of Things (IoT)

Billions (then trillions) of connected devices

Initially sense & report on their environment

Eventually interact with and change their environment


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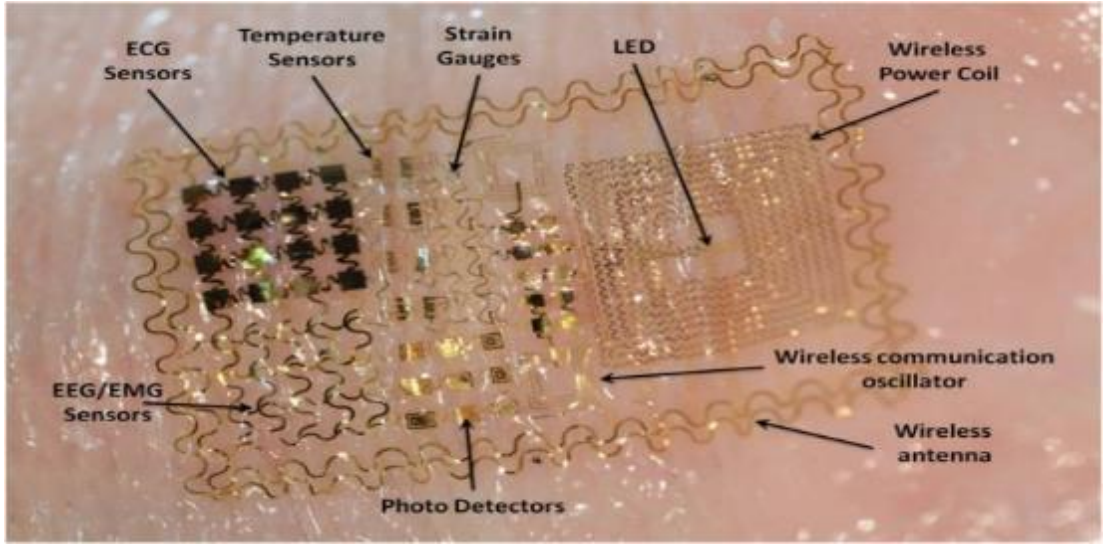
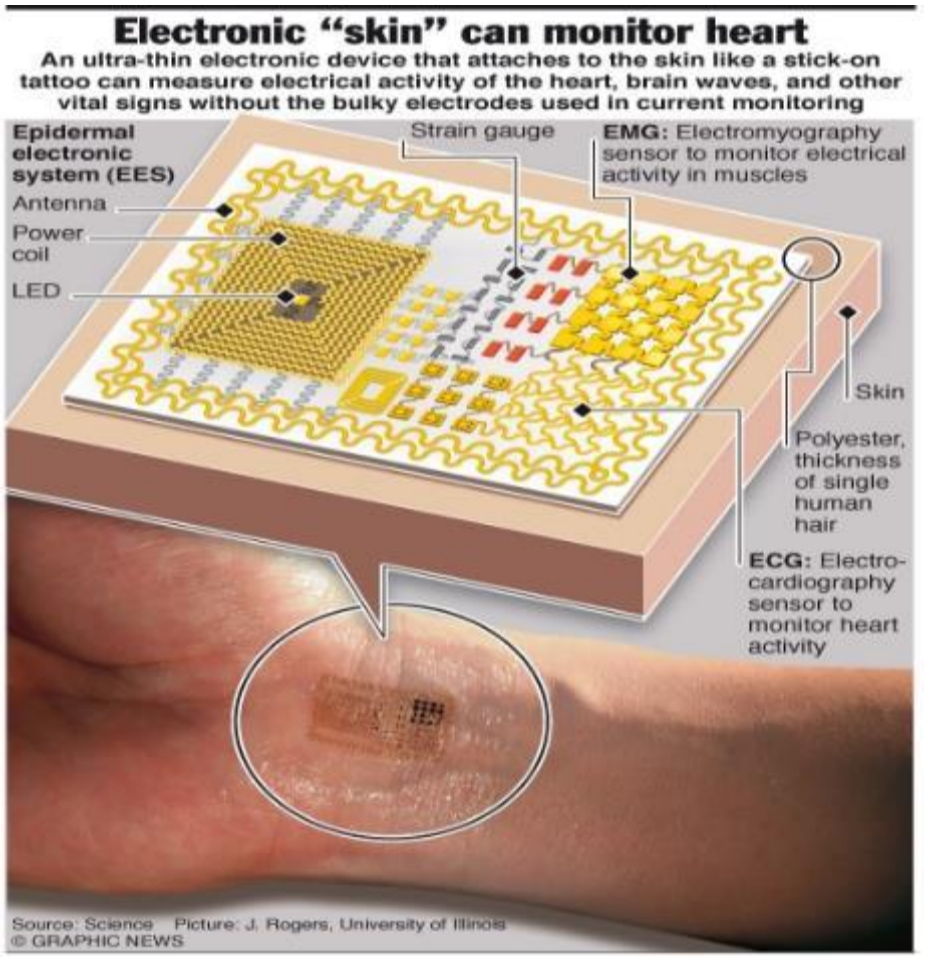
# Digital Tattoos

Direct digital interaction with the body

Body joins the “Internet of Things”

Creating the “Internet of Us”

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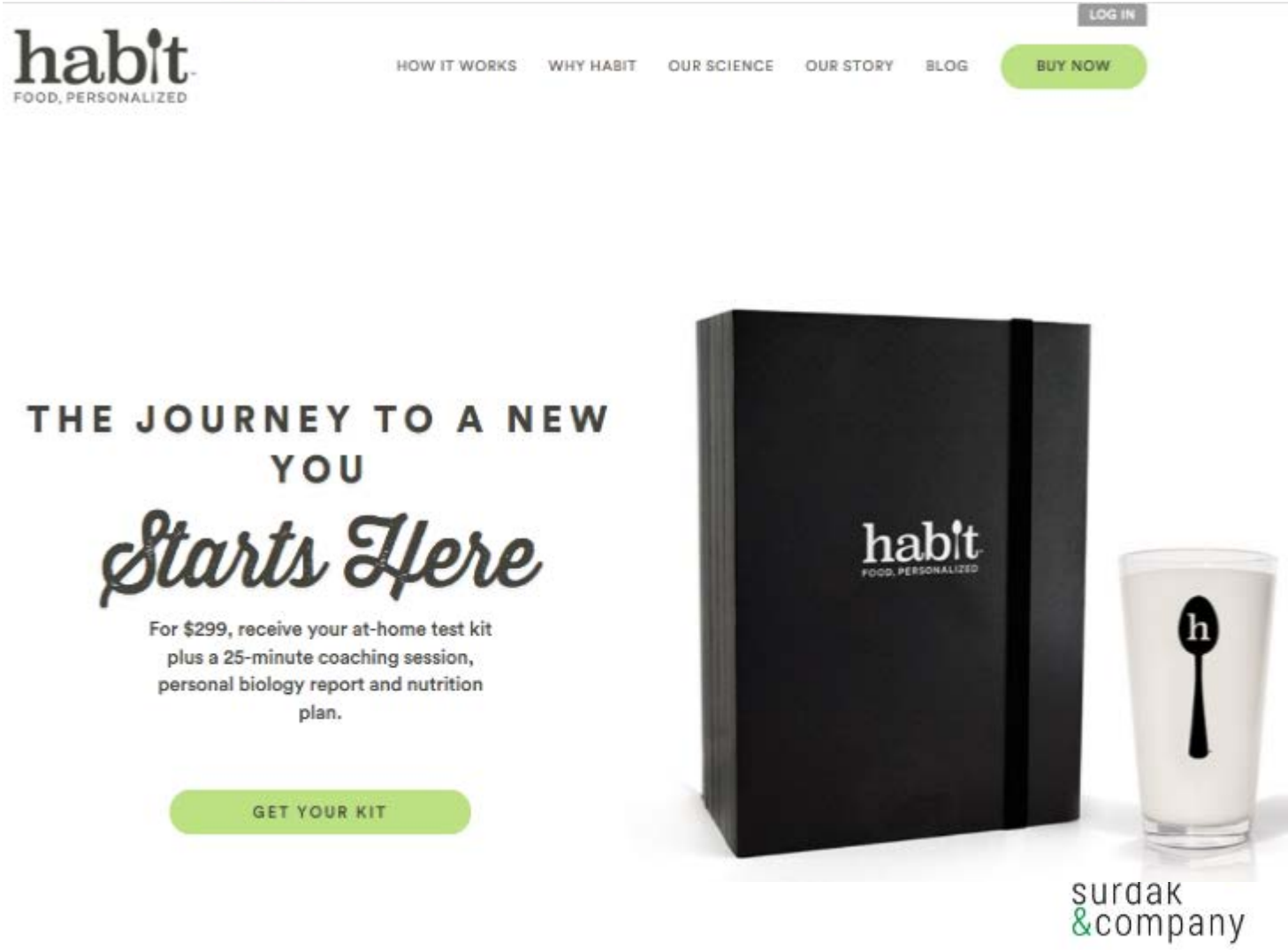
# 3. Thingification – Tactical Implication

What would you tell a soup company?

What's the risk in using this data?

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# 3. Thingification – Systemic Implication

Astronomical amounts of additional, new data

Correlations and insights never before possible, if you collect it and use it

Dramatically-better utilization and outcomes;
and their resulting expectation

Entirely new revenue streams for organizations that do so

**Big Brother is tracking you: Car companies monitor drivers' habits such as speed and destination using technology included in their vehicles**

- Car companies are able to trace driver habits such as speed and destination
- Such companies say they only do so with the car owner's consent but such an agreement can be buried within a buyer's contract
- Some experts worry that the amount and type of data that car companies can glean may constitute a breach of privacy
- Companies and third parties that use the data insist they use information for altruistic purposes such as alleviating traffic

By DAILYMAIL.COM REPORTER
**PUBLISHED:** 20:54 EST, 16 January 2018 | **UPDATED:** 21:32 EST, 16 January 2018

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# 4. Blockchain – What is it?

A **blockchain** is a continuously growing list of records, called *blocks*, which are linked and secured using cryptography. Each block typically contains a cryptographic hash of the previous block, a timestamp and transaction data. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks, which requires collusion of the network majority.

A means of authenticating a digital file

Cryptocurrencies, like bitcoin, use block chain, but block chain is a technique, bit coin is a use case

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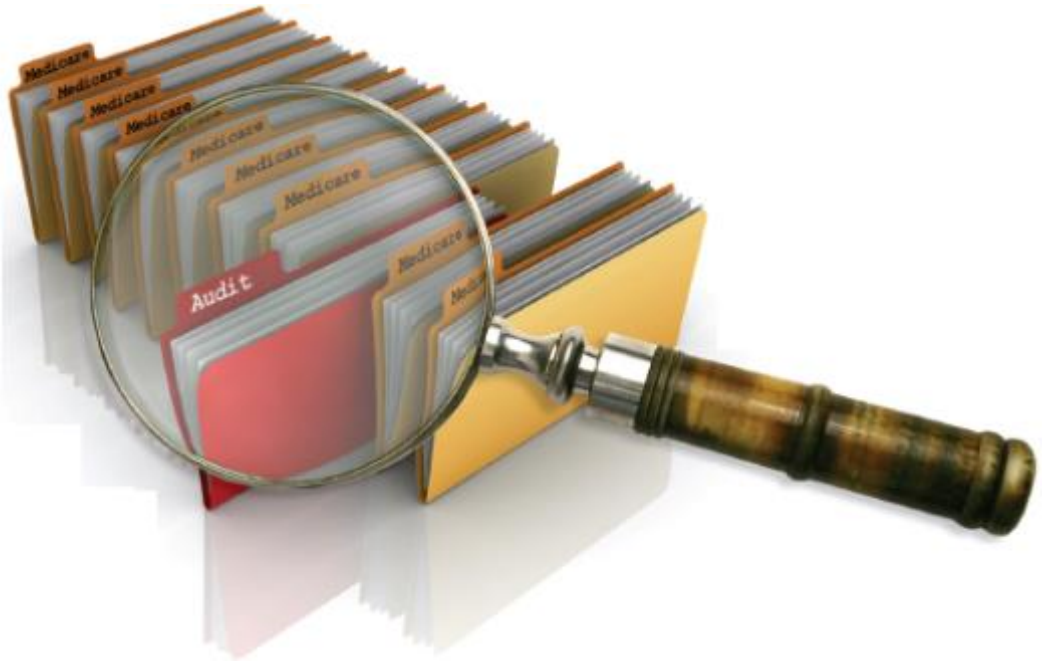
# 4. Blockchain – Tactical Implication

Smart contracts, which automatically execute based upon rules

Medical records may be stored, securely, in the cloud, and shared on-demand

Records are immutable, secure, and both protected and publicly available

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# 4. Blockchain – Systemic Implication

Conversion of white collar jobs; significant disruption to anyone focused on records management, contracts, audit functions, etc.

Expectations of instant access to accurate information

Authorizations, releases and procedures all online, digitally-confirmed and immutable

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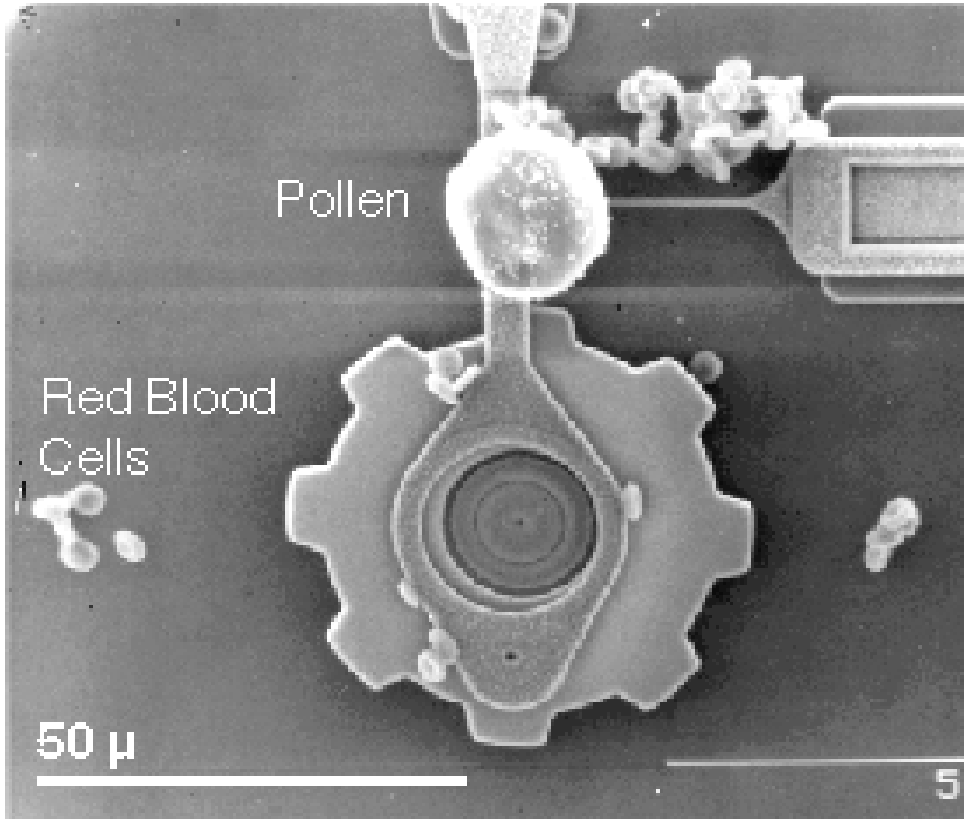
# 5. Nanotechnology – What is it?

**Nanotechnology** ("**nanotech**") is manipulation of matter on an atomic, molecular, and supramolecular scale.

One nanometer (nm) is one billionth, or $10^{-9}$, of a meter. The smallest cellular life-forms, the bacteria of the genus *Mycoplasma*, are around 200 nm in length.

Nanotech in healthcare seeks to build molecular machines that can interact with and manipulate the body at the scale of individual cells

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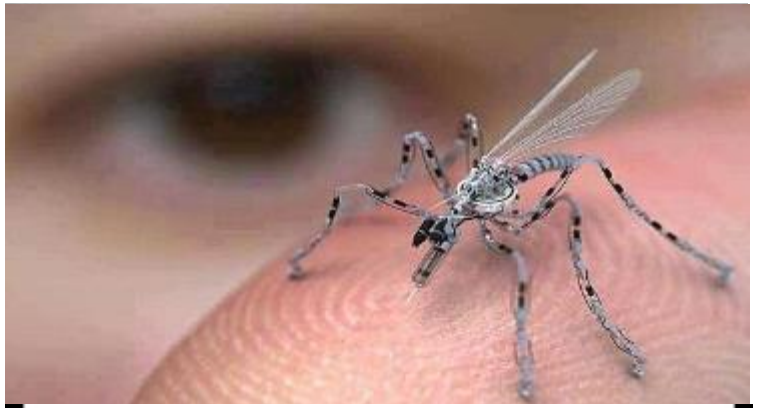
# 5. Nanotechnology – Tactical Implication

Improvement in existing delivery mechanisms:
interaction with individual cells

Micro-devices capable of mechanical manipulation,
rather than chemical, pharmacological,
electromagnetic or biological

Entirely-new treatment mechanisms; particularly non-invasive

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# 5. Nanotechnology – Systemic Implication

Complete change in treatment approaches

In-patient care increasingly irrelevant, and “bad”

A further acceleration of IoT, data generation and analytics, etc.

As with all disruptive technologies:
Unintended consequences?


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# 6. Additive Manufacturing – What is it?

Creation of items by adding material, rather than removing it

Completely-custom designs, made on-site

Can directly mimic biological structures

Expanding to include living tissues

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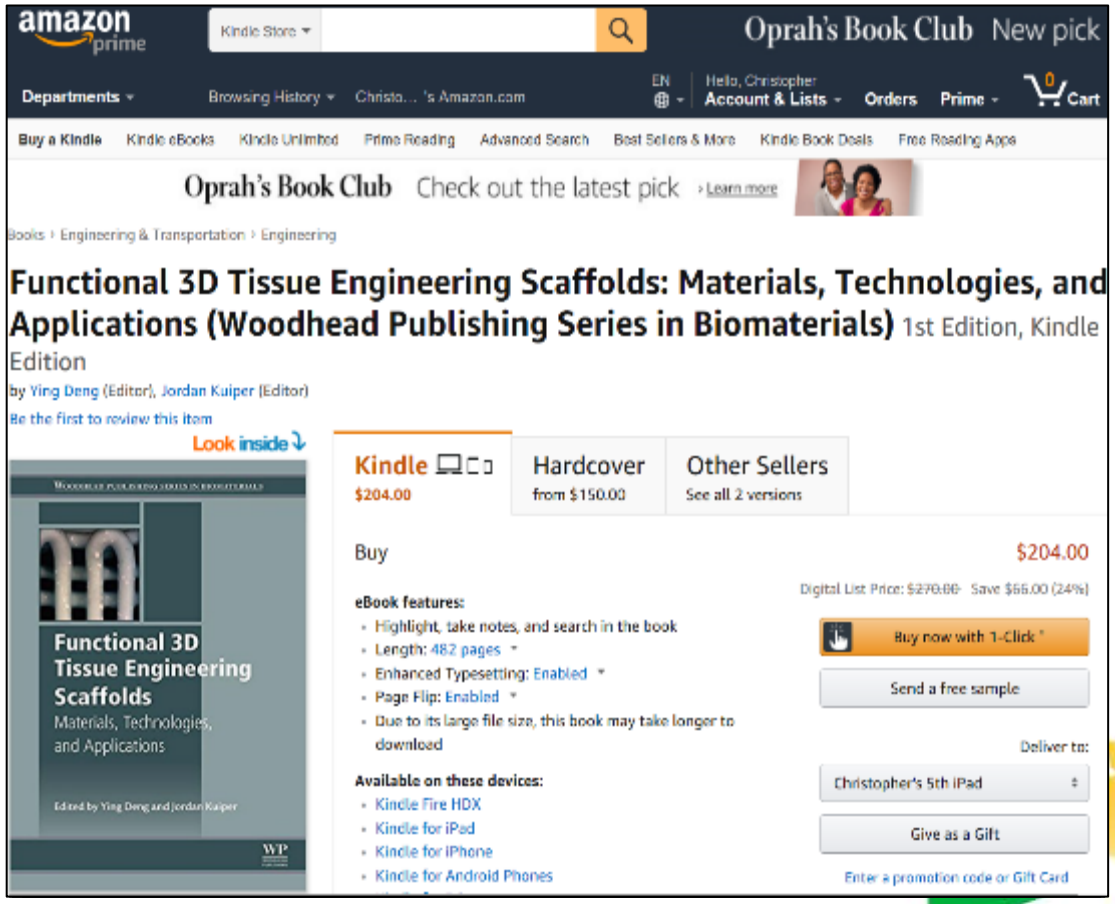
# 6. Additive Manufacturing – Tactical Implication

Totally custom implants, made on-site

Not limited to inorganic items

State of the art moving fast; patients will expect this capability

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# 6. Additive Manufacturing – Systemic Implication

Patient-specific treatments: huge impact on governance

Collapse of traditional supply chains

Customized, personalized solutions available, and expected

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# 7. Digital Workforce – What is it?

RPA

*Execute*

Machine Learning

*Enhance*

Cognitive Computing

*Explore*

Artificial Intelligence

*Engage*

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# Machine Learning?

From Wikipedia:
Machine learning explores the study and construction of algorithms that can learn from and make predictions on data. Such algorithms overcome following strictly static programming by making data-driven predictions or decisions, through building a probability model from sample inputs.

Features:

- **Responsive**: Can produce different outcomes based upon different inputs or conditions
- **Controlled**: Applies only those lessons that have been taught
- **Flexible**: Can be taught a wide range of lessons to apply to a problem
- **Bounded**: Generates outputs based upon known or learned probabilities


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# Benefits of Machine Learning

**Contextualization:** Outputs may be customized to a range of context indicators

**Independence:** Can perform basic decision-making based upon statistical probabilities

**Learning:** Can improve responses based upon actual experience

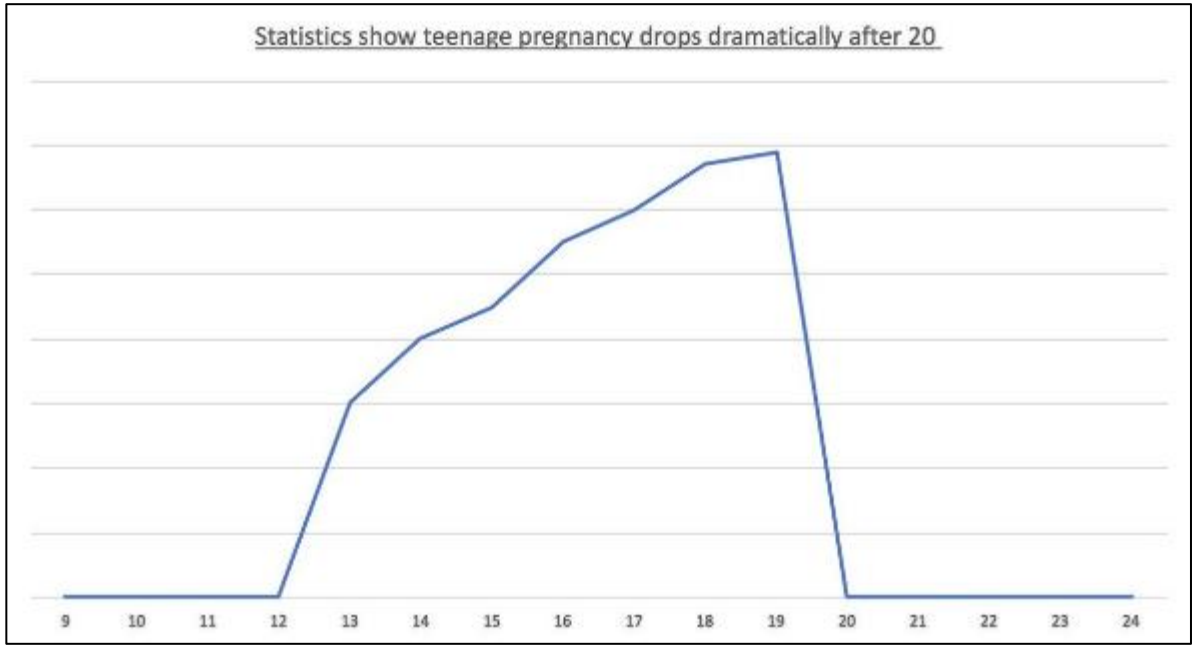


# Machine Learning Weaknesses

**Callow**: Machine Learning only knows what it has been taught; it's not precocious

**Biased**: Follows, and often reinforces, the biases in its training

**Spoof-able**: Can be "fooled", unless properly trained and monitored

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# 7. Digital Workforce – Tactical Implication

Significant reductions in necessary, but non-value-added work by humans

Higher quality, less risk, lower cost

More efficient, less wait time, more patient-centric


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# 7. Digital Workforce – Systemic Implication

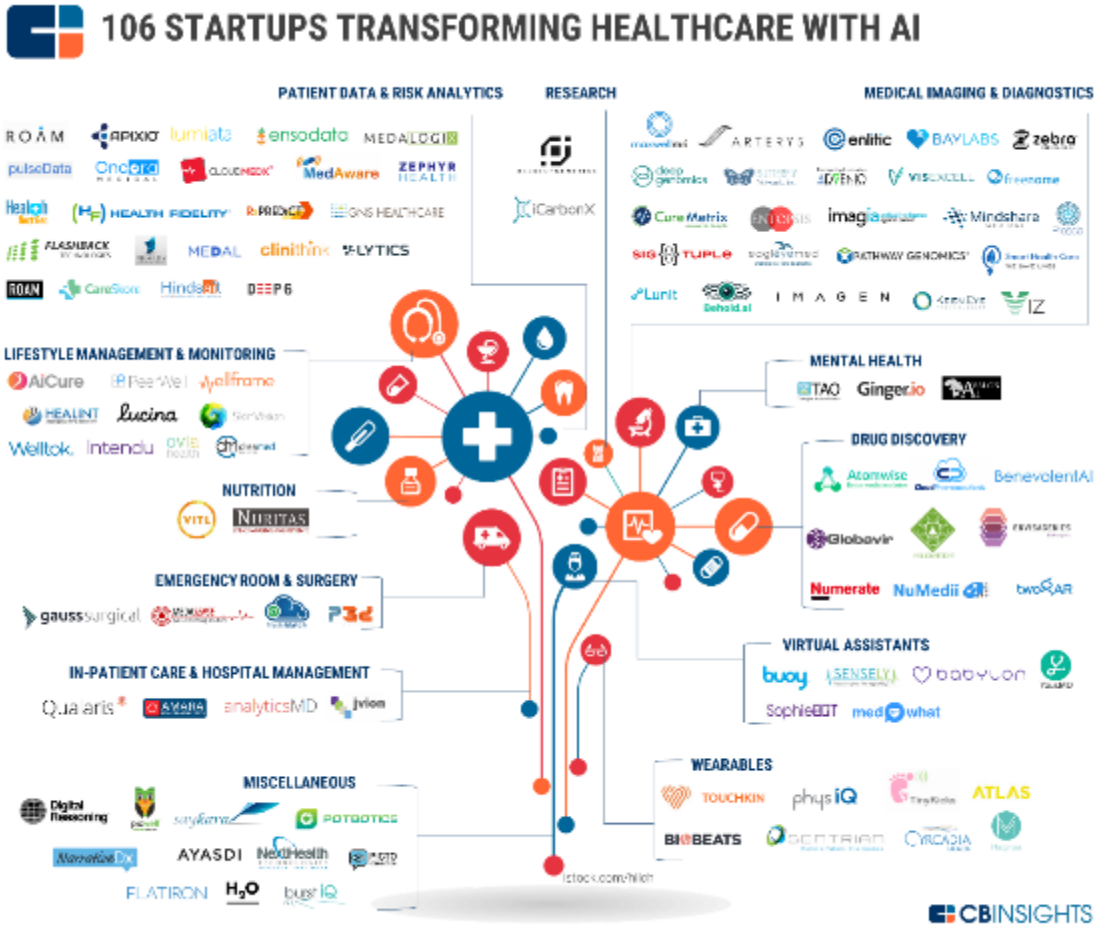
Dramatic changes in workforce, staffing, etc.

Where people have choice, they'll choose only the best, polarizing the workforce

Aggressive growth in medical tourism; better treatment, lower cost, access to newer treatments and procedures

"Tyranny of Location" eliminated, bringing global competition to health care

Extreme increase in unknown-unknowns in your competitive environment



# So What?

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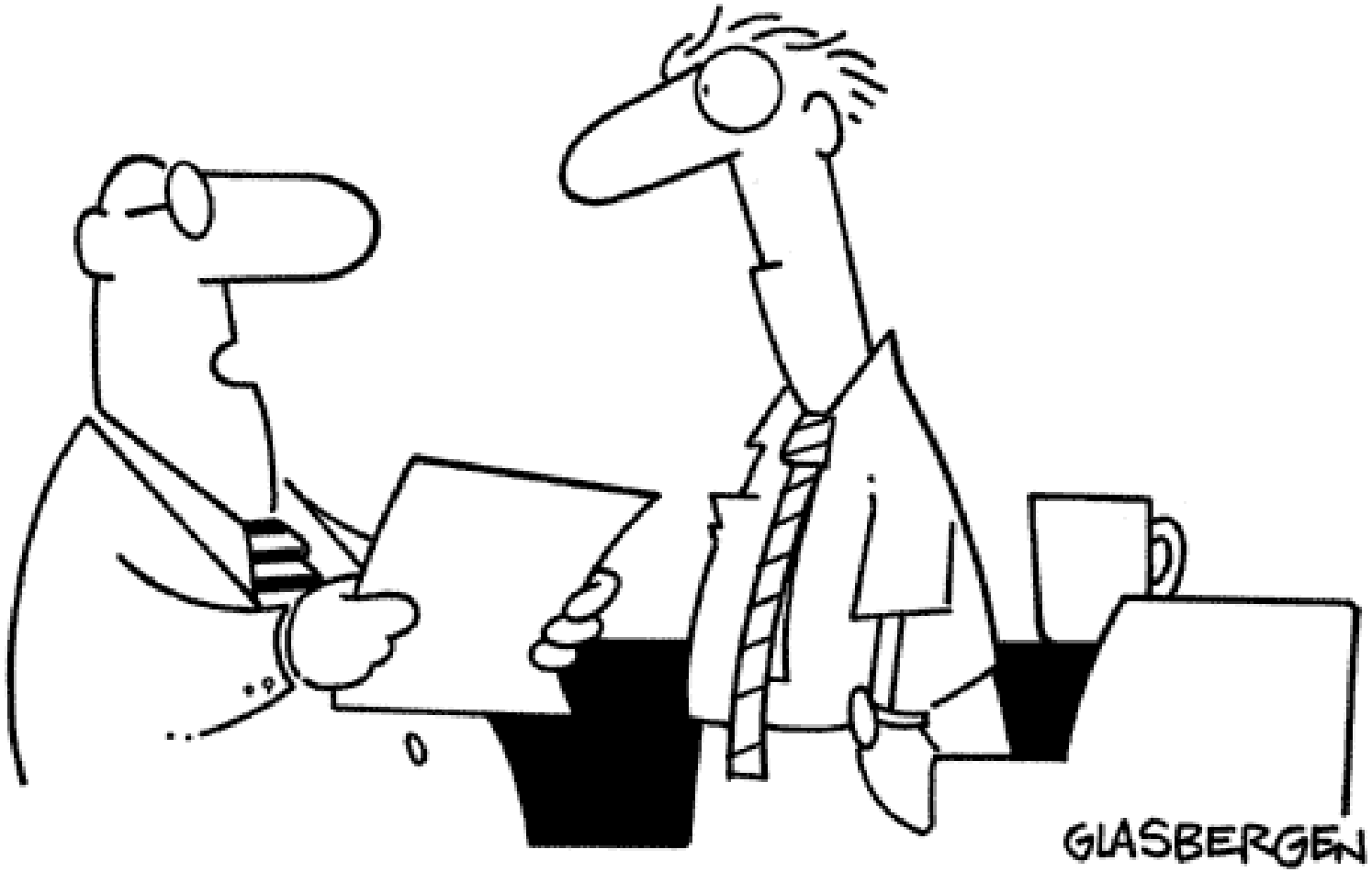


**"I want you to find a bold and innovative way to do everything exactly the same way it's been done for 25 years."**

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# Start by Getting Started

Are you disrupt**ing**,

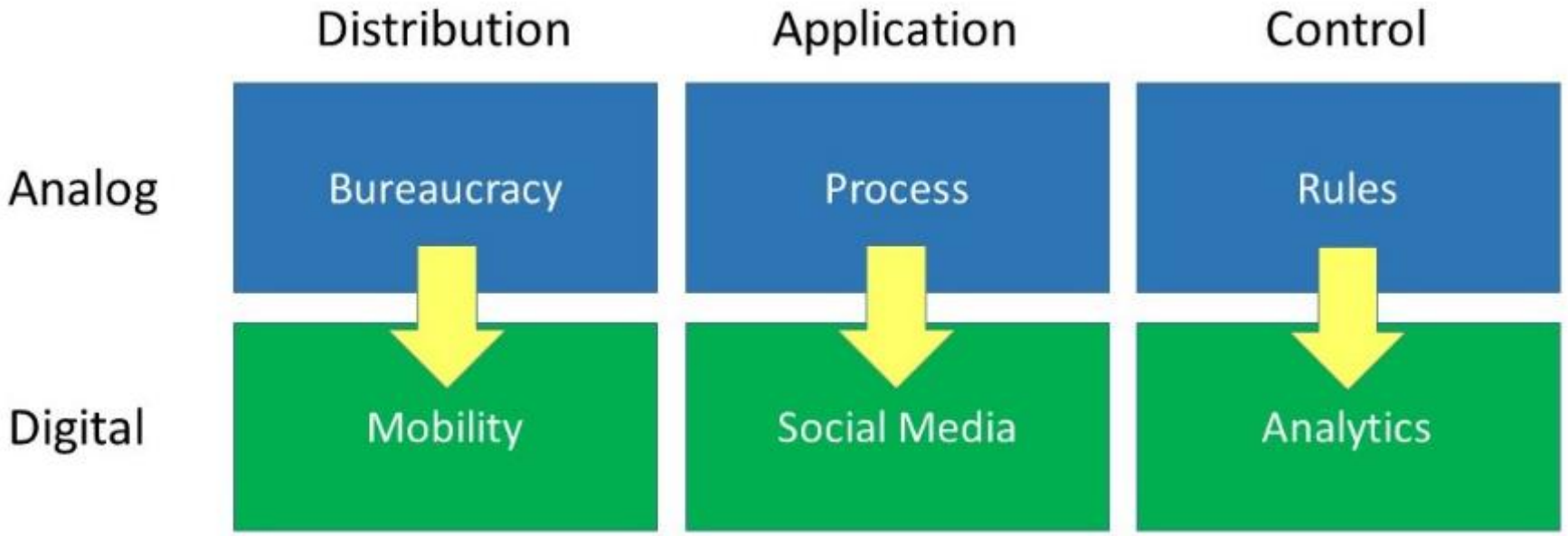
or

being disrupt**ed**?


Walmart
Surgery Center
…Becomes This?
Our planet.
20% off
$38
12 Month Guarantee
Men
Youth
$19

# Digital Transformation: Not A Buzzword!

Realigning from Capital-Centricity to Information-Centricity




| | Distribution | Application | Control |
|---|---|---|---|
| ***From:*** | *Customers Come to Us* | *Operate Serially* | *Decisions Out of Context* |
| ***To:*** | *We are With Our Customers* | *Operate Collaboratively* | *Decisions In Context* |

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# Analogs CAN Go Digital

- Hightail
- Diseconomies of Scale and Scope
- Gamification
- Put Customers to Work
- Intimacy and Purpose
- Do then Learn
- Fail Fast
- Print Your own Money


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# Thank You!


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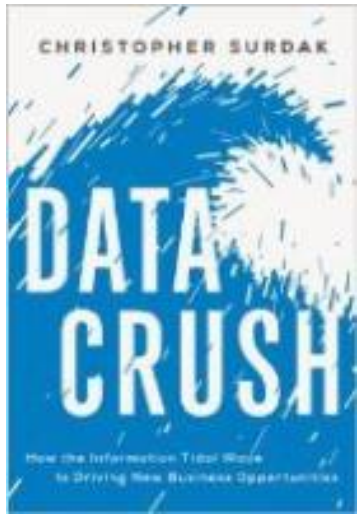


If you'd like to learn more, check out "*Data Crush*," getAbstract's International Book of the Year, 2014

Also see my columns in *European Business Review, HP Matter* and *TechBeacon* Magazines, and my blogs on *European Financial Review*, *China Business Review*, *Dataconomy.com*, and *Inc. Magazine*

"***Jerk: Twelve Steps to Rule the World***" Now available on Amazon

And thereafter, book three, "*Rupture*," and book four, "*Averageocracy*," In 2017

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