

# Scenario Card Deck: STEEP Categories

## Social (Cultural / Demographics)

- Aging Baby Boomers
- Gen Y / Millennials Grow up (Family Formation)
- Home-schooling
- Third Place Culture
- Childhood Health (Obesity, Mental, Special Needs)
- Food 2.0
- Maker Culture / DIY

## Technology (IT; Bio; Neuro; Nano-)

- Web Era of Machine to Machine (M2M)
- Video & Sensor-based Analytics
- Indoor Navigation / Geo Web
- Rise of Personal Software Assistant
- Additive Manufacturing
- Reinventing the Value Chain of Data
- Location-based Service / Experience Dance
- Behavior Change / Gaming Mechanics
- New Science of Decision-Making

## Economics / Business

- BRICs
- South to South Globalization
- Collaborative Consumption
- Income Gaps
- She-conomy / Reverse Gender Gap
- Product Plus Service
- Reail Experience Design
- The Distributed Workforce: Co-Working
- Localization /

## Environment

- Commodity Constraints
- Climate Change
- Energy System Volatility
- Rise of Third Place
- Green Values
- Indoor Air Quality

## Politics

- Continued Fragmentation
- Uncertainties of Labor Legislation
- Local Movement Policies
- Radical Transparency / Challenge to Authority
- Clustered Communities / Rise of Tribes
- Uncertainties of Labor Legislation
- Labor Productivity Augmentation

# Collaborative Consumption

Collaborative Consumption refers to platforms that allow friends and strangers to share in offering, buying or borrowing of products, services and experiences. These *sharing economy* innovations are enabled by web-based social networks that connect communities and allow users/companies to build and manage reputations as a form of currency.

*Social commerce* empowers buyers and sellers by maximizing local economies. It also creates vast amounts of aggregated data that can be used to understand communities and user behavior.

- **Relay Rides** is a peer-to-peer car sharing service that recently announced a partnership with GM OnStar™
- **AirBnB** is trusted match network of homeowners who have available rooms for business travelers and tourists
- **Barter Card** allows you to store and pay with tradable talents
- **Vayable** connects tourists with people who provide personalized services in local communities

Companies, institutions and communities are looking towards *Collaborative Consumption* as way of expanding access and leveraging reputation to improve the authenticity of experiences.



sharemystorage.com



Enjoy a Private Piano Co...  
NEW YORK, NEW YORK



Meet John P

John democratizes the arts, fosters appreciation in music, and provides a more personal alternative to Carnegie Hall.

\$9+  
per person

1 hours



Explore Immigrant New York  
NEW YORK, NEW YORK



Meet Andrew S

Andrew is a lifelong New Yorker passionate about understanding how people and culture are interdependent and shape each other o...

\$75  
per person

6 hours

# Motion Capture-based Interfaces

*Natural user interfaces* (NUI) include the use of voice, touch, textiles, scent and gesture to enhance or replace keyboard and screen-based technology experiences. A popular emerging NUI interface platform captures natural human motion without the use of any controllers or wearable devices.

Microsoft's Kinect™ system, which uses infrared sensing, has been embraced by third-party developers who are exploring applications beyond video games. The company has released open-source codes for Kinect to encourage the development of innovative experiences.

Early Kinect 'hacks' – show tremendous potential in rethinking how we interact with the world around us. Kinect hacks have been designed for artistic theatre productions and museum exhibit interfaces to allow users to communicate and change scenery using natural body motion. Kinect has also been used for teaching people everything from yoga, dancing and CPR training. Now imagine many other objects in our lives have Kinect sensing capabilities!

In the near future – organizations will be designing interfaces based on the idea that *objects can sense* and see the world around them. New forms of data will be used to analyze levels of activity and possibly interpret interest and engagement (e.g. where are eyes focused; body posture).



OpenNUI™



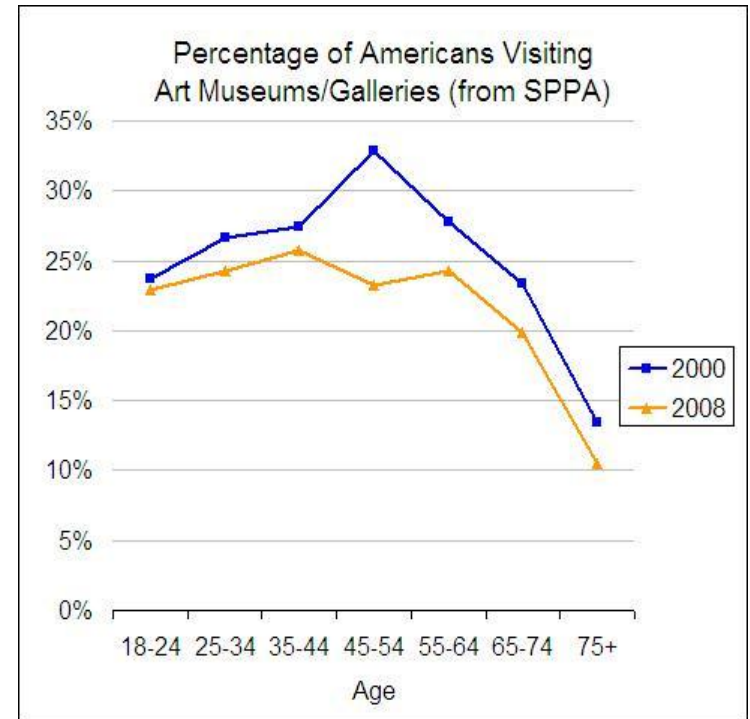
# Aging of *Baby Boomers*

Our *Baby Boomer* cohort - the roughly 80 million Americans born between 1946 and 1964 are entering their next life stage. Each day more than 10,000 Boomers turn 65 as we head towards an unprecedented *demographic transition* in raw numbers and percentage (25%) of the 65+ population.

This transition exerts a *double whammy* effect of diminishing the supply of high-skilled experienced workers (via retirement/death)— while adding to pension and healthcare liabilities. For the many Boomers who will want *or need* to continue working – there are significant challenges to US businesses amidst a more competitive (and younger) global workforce.

Civic and cultural organizations are also unsure of the commitment they can expect from Boomers who might have less discretionary income than anticipated— or higher geographic mobility and less affiliation with local institutions.

Opportunities are still abound to those organizations who can capture the hearts and minds of Aging Boomers set on reinventing social and cultural norms about active aging.



*By every measure of engagement one can think of, [boomers] do less: They vote less, read newspapers less, are less apt to join churches or civic organizations.*

Harvard School of Public Health/MetLife Foundation (2004)

# Homeschooling

Homeschooling (students taught by parents or tutors) continues to be a viable and increasingly mainstream option to many American families.

In 2011, an estimated 1.73 to 2.35 million children (in grades K to 12) were home educated in the United States (compared to 37 million in primary system)– as the segment continues to grow at an estimated 2% to 8% per annum.

The future of homeschooling is likely to be shaped by a number of converging trends related to policy, technology, social acceptance – and support from higher education and hiring companies. There is a growing ecosystem of support services for home-school children that allows them to share tutor resources and participate in athletics, arts and cultural institutions that are traditionally mediated through schools.

The trend could continue to evolve as web-based delivery models such as Kahn Academy increase the viability and quality of self-direct learning that can occur beyond boundaries of traditional schools.



# Millennials/Gen Y Grows Up

Gen Y – or the *Millennials* – are those 80 million Americans born between 1980 - 2000. In the U.S. they will become the majority adult population by 2017.

This generation will be passing through an important life stage – *household/family formation* as they gain control over consumer and discretionary spending associated with starting families, buying homes, and establishing careers. This is also the critical stage of building connections to civic and cultural institutions.

Raised in the age of technology, members of Gen Y are affectionately referred to as ‘digital natives’ and will continue to see the world through the lens of social web and mobile platforms.

Millennials continue to show strong preferences to brands that support social values similar to their own such as diversity, environmental, and social responsibility. And despite current economic woes, most survey studies suggest an unyielding optimism within this large and empowered cohort.

There are many uncertainties related to the lifestyle preferences of Millennials including their choices to settle in suburban, inner suburb or city communities are near transit and downtown offices. And it is unclear whether they will choose to support existing institutions (e.g. United Way) or create their own solutions (e.g. Charity Water).



# Childhood Health

The spectrum of childhood related health issues continues to expand from physical (obesity; diabetes), to pervasive developmental disorders (PDDs) such as autism – to other aspects associated with special needs.

Other indirect lifestyle issues such as *nature-deficit syndrome* and children living in community (healthy) *food deserts* are gaining increased attention by parents and policy makers.

Communities are dealing with new dynamics such as online *bullying* – and the use of phone cameras to record violent acts. And schools are dealing with the clash of decreasing budgets and increased pressure for providing healthy food (at low cost) – and overseeing the social integration of children with special needs.

Positively, there are advances in dealing with early diagnosis and treatment— and social recognition of failed policies and conditions for healthy childhood. New public-private partnership strategies are bringing healthier choices to children and their families. Technology is also playing role as - tablets and software programs are being used to change the lives of young people with Autism spectrum disorder (ASD)— and provide new forms of communication for hearing/visually and physically impaired young people.



# Food 2.0

Food continues to be an aspect of public and private life that is characterized by a wide range of bifurcating trends – healthy and otherwise. Despite evidence of continued poor eating habits – and limited choices in areas officially labeled as *food deserts*, there are signals of positive changes ahead for better food choices.

There are dynamic new cultural influencers in the world of food. Celebrity chefs and self-made YouTube stars are elevating the art of cooking across television and the social media landscape. *Foodpreneurs* are expanding options of artisan foods at local supermarkets, farmer markets and *pop-up* carts that deliver healthier options in unique places.

*Locavores* are people who commit to buying foods produced within a 100 mile distance. And some restaurants are promoting *Agri-Chefs* that use ingredients grown by themselves onsite or at local farms. Developers of food-based social and mobile web *apps* are helping people make more informed choices.

There are even positive signs around shifts in food supply chains able to accommodate changing expectations. Institutional demand from hospitals and schools for higher quality and more diverse produce pushed Sysco to rethink its supply chain to integrate local produce and products for regional markets. Two test pilots in Kansas City and Grand Rapids (MI) have shown an economical way to return to local food chains.

## Food Desert *Locator*





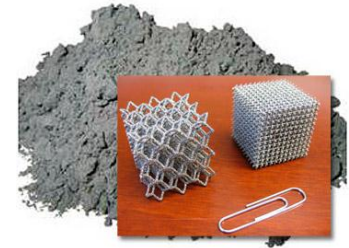
# Additive Manufacturing

There is a new paradigm for advanced manufacturing that could change the industrial policy and workforce complexion of regional economies. Often referred to as *additive manufacturing*, rapid 3D prototyping, or *on-demand* manufacturing – the process involves techniques that *print* objects layer by layer using liquids based on composite polymers (plastics) or metals.

Additive Manufacturing can be used to create simple toys – to more complicated, high value engineering parts. Dozens of companies and research institutions are printing everything from automotive components to homes. The next step is scaling the technology and training the workforce.

The utopian vision is a world of home-based ‘Maker’ machines that can print a new shoe, dinner plate or tablet computer – layer-by-layer. But a more realistic near term vision is based on regional manufacturing that uses locally sourced raw materials and more specialized low-volume production machines to create products sold locally and abroad.

With the right investments and continued breakthroughs, additive manufacturing could change the makeup of the local workforce and the dynamics of regional economies in the decades ahead.



**‘Printing’ Houses  
(CRAFT/Stanford)**

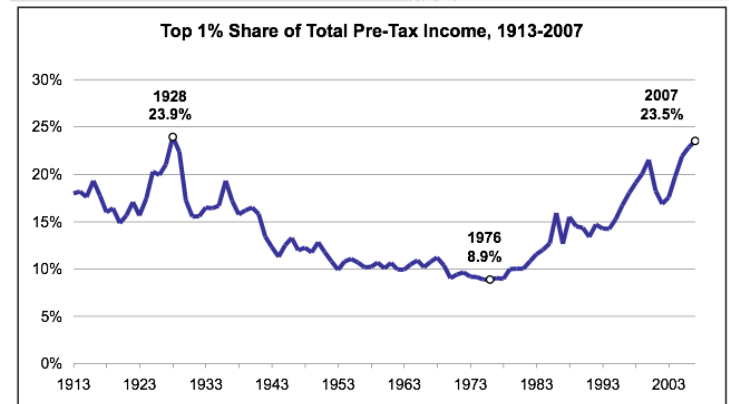
# Growing Income Gaps

Since the early 1990s the US economy has been reshaped by stagnant income growth for most traditionally *working* and *middle class* households.

Continuing fears of a *shrinking* Middle Class and lack of upward socio-economic mobility are reinforced with forecasts by workforce experts who see decreased opportunities for improving income gains up against greater global competition and decline in workforce education and vocational training. The problems could be exasperated by a shrinkage in service sector jobs such as retail which provided steady but lower wage positions to many working class families.

Policy makers are concerned of the ripple effect on the housing market, tax base for state/federal budgets and political fragmentation. And many pundits are quick to connect increasing socio-economic gaps with public frustration evident in the rise of political movements of the Tea Party and 99%/Occupy groups.

Other threats to income growth include a sustained increase in healthcare costs, rising expenses associated with education, inflation/deflation/stagflation, and energy (fuel) price volatility.



Source:CBO



# Reinventing the Value Chain of Data

*Big Data* is often referred to as a *next big thing* for the web and worlds of business and government. It refers to the massive amounts of personal and machine data (unstructured/structured) that is generated from our web-connected lives. Some anecdotal estimates suggest that more data was generated and captured in 2011 than in all of human history.

Driven largely by social media and digital transactions, industry analysts believe that by 2015 *enterprise* data including customer behavior, sales, location-based data and application use, should grow by 650%.

Organizations are rethinking their innovation strategies around a new *value chain* of Big Data from a traditional (low value) description of *What Happened...* to a more valuable predictive and prescriptive form of service innovation that helps guide the person towards the right product, service or experience.

The so-called *Recommendation Economy* is visible today with more curated products from Amazon and Netflix. But we are only in the early stages of more prescriptive data-based service innovations based on real-time and personally relevant choices.



# Rise of 'Third Place'

The creation of *Third Places* - which refer to those *not home, not work* public-private gathering places-- is now widely embraced by institutional leaders, urban planners, and elected officials as a strategy to design livable communities and welcoming civic institutions.

Starbucks and Barnes & Noble built their fortunes and brands on quality of place-- and institutions such as the Rubin Museum and Walker Art Center have created compelling *third place*-based experiences that exist outside their traditional exhibit halls.

Looking towards the future, *third places* are being re-shaped by a growing community of interaction designers who merge principles of architecture, social ergonomics and technology-mediated experiences to reset expectations for civic engagement and the creation of a *cultural commons*.



The San Francisco Mobile Museum is a moveable feast of local culture. Exhibits are oftentimes by the people and of course, for the people.



Palo Alto Theatre open for Co-working

# Location-based Service Innovation

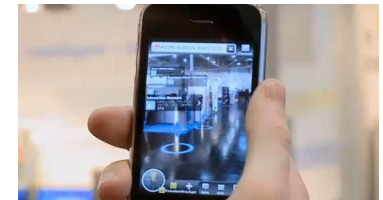
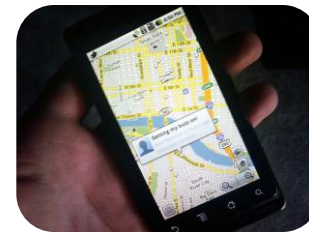
## *Location, Location, Location*

Location-based services (LBS) are expanding as people become more comfortable managing their identities on-the-go using advanced mobile devices and social network level connectivity. A culture of *advanced users* who expect location-specific information and experience design could change how organizations deliver their services within communities and inside home institutions.

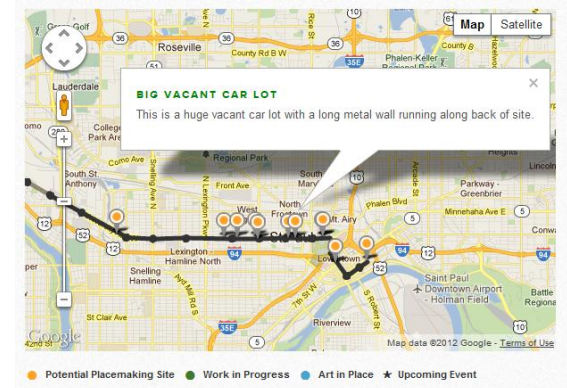
Outdoor location based services are being led by startups such as Foursquare – which is partnering with retailers and credit card companies. Google Maps/Places is an open civic and business platform for creating location specific service offerings that serve as beacons for reaching relevant audiences.

Indoor navigation companies such as Mecilo, Senion Lab, and Navizon are targeting early adopter markets around shopping malls, airports, museums, campuses and libraries.

- **Irrigate** is a project in Minneapolis that aims to identify and promote arts-driven place-making within the region by allowing citizens to find arts experiences across the cityscape.



Indoor Navigation



*irrigate*

# Behavior Change & Gaming Mechanics

Organizations are learning how to create a culture of *advanced users* that embrace the notion of behavior change derived from their use of products, services and experiences. This strategy is often framed as *gaming mechanics* – which refers to the game design structure that allows a user to move from *novice to expert*.

Weight Watchers was the original *gaming mechanics* brand to use points, peers and reward systems to help members achieve goals and receive recognition. Today we see the same principles of creating structure for rewards and penalties based on real-world actions in new products and services.

Ford's hybrid vehicle, the Fusion, has a *green vine* on the dashboard that grows to reward fuel efficiency and recoils to punish inefficiency. Utilities use dashboards for helping people conserve energy and water use.

Mozilla has partnered with the MacArthur foundation to create a web-based platform for *badges* that could spur gaming mechanic innovations and behavior change across all industries and institutions.



**Mozilla's Open Badges infrastructure** makes it easy to issue, display and manage badges across the web -- opening new ways to show your skills and achievements to the world.

Open Badges is a project of Mozilla with support from the MacArthur Foundation.

MacArthur Foundation

# Energy Sector Volatility

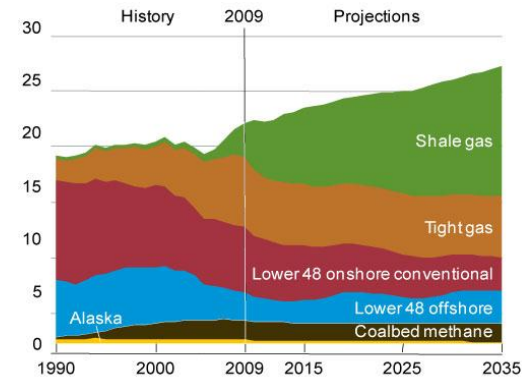
In the next 25 years, global energy demand will increase by 40% driven almost entirely by emerging economies. The challenge will be in meeting the production requirements to feed this growth.

The International Energy Agency forecasts that the global peak of conventional oil production will occur around 2020, leading to a period of high oil costs as we shift to more expensive non-conventional (and carbon intensive) resources. New opportunities for utilizing shale natural gas are under intense public pressure against potential downsides to *fracking*.

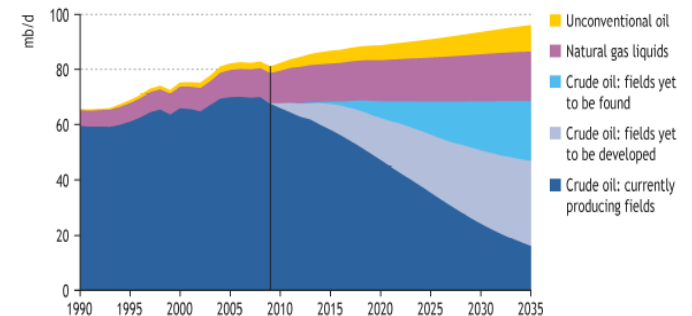
Meanwhile aging infrastructure for electricity grids and transportation in the U.S. could lead to higher prices as we invest to restore and rebuild for the 21<sup>st</sup> century.

Large fleet owners like FedEx and local governments are testing electric vehicles as a way to hedge against oil prices. And businesses are looking to *distributed power* as a way to reduce their carbon footprint and take control of their own power generation. Fuel cell startups Bloom Energy and Clear Edge Power are selling distributed power solutions to large companies such as Walmart, Adobe and major hospitals. Their devices use natural gas to create electricity on-demand and without interruption.

Figure 2. U.S. natural gas production, 1990-2035 (trillion cubic feet per year)



World oil production by type in the New Policies Scenario



# Green Values = Transparency & Accountability

*Green* values continue to grow more mainstream as an important policy issue related to sustainability of natural resources and the environment. But the real world impact for organizations goes beyond sustainability to becoming more transparent and accountable.

Consumers and advocacy groups are requiring real-world data to support more transparent and accountable supply chains and life cycle analysis to match *green* claims.

We can see measurable *green* values shifts occurring among Aging Boomers eager to leave a positive legacy and younger Millennial adults who have a higher sense of eco-literacy regarding the impact of products and services.

Organizations are expanding their partnerships with agencies that can help them become more transparent and reduce waste and negative impacts on raw materials and life cycle design of their products. Coca-Cola hopes to become the first water neutral company by reinvesting in regional water systems.





# Maker / DIY Culture

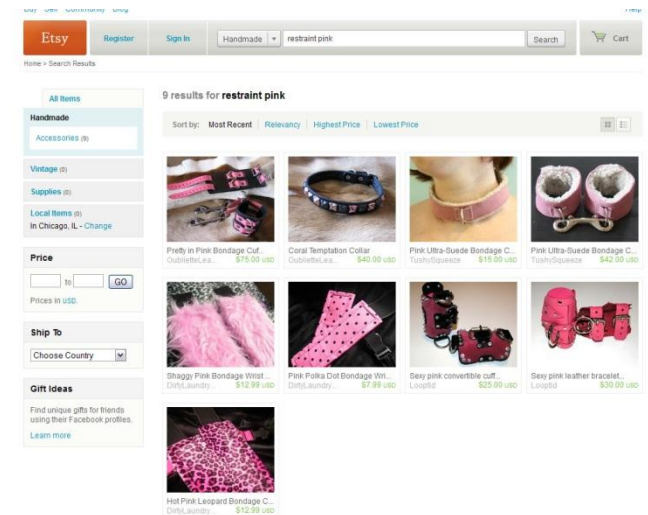
The once small but passionate community of *DIYers* (Do it Yourself) has now grown to a much larger – but still passionate – Maker Culture that promotes a return to the art of craft and *making things*.

This Maker Culture shift is often framed as a progression from consumer to *prosumer* culture where more empowered users take the means of production into their own hands.

Maker Faire is a multi-city (global) event that attracts young and old to share how they create their own products and unique inventions.

Hacker Spaces such as Noise Bridge and NYC Resistor might be leading indicators of changes ahead for the DIY community. A few county libraries have created public Hacker Spaces for people who like to tinker with electronics.

*Etsy* is a massive web-based marketplace for selling hand-made crafts. >> Home-based Meet Ups and self-organized gatherings for Scrap-booking and other DIY activities. >> And more parents are returning to build-it-yourself kits for their children to reconnect them with a traditional sense of play.





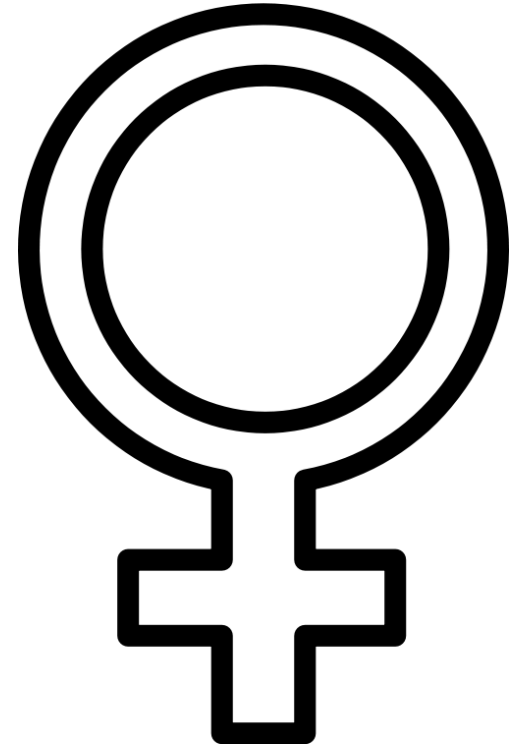
# She-Economy/Reverse Gender Gap

Today women account for 75% of consumer spending decision the United States. A survey by Boston Consulting Group survey revealed that – globally- women will control \$15 trillion dollars in global spending by the year 2014.

While wage gaps continue between similar male-female positions, women have made greater gains in recent years relative to male workers. And households are changing as more women become primary earners.

College campuses have already experienced a dramatic shift with a majority of undergrads and professional school student positions now held by women (MBA and Engineering programs are the only professional schools to remain majority male student).

Companies are adapting with products and services designed to LearnVest is a woman focused financial services company. South African insurance company, 1st for Women, was the first insurance company tailored specifically to the insurance needs of South African women. In the United States, Porsche developed a women's-only driving school and track. Coca-Cola and Walmart recently announced a plan to double the amount of goods it will buy from female-owned business worldwide.



# Learning Management Systems (LMS)

The world of institutionally-bound and self-directed learning is being transformed through the creation of interoperable Learning Management Systems (LMS) that provide a platform for the delivery, collecting, collaboration and analyzing of data and experiences from educational content.

The promise of LMS platforms is an opportunity for continuity in our lifelong learning within and beyond formal institutions. Learners will be empowered with a platform that enables any form of connected media to be included in their educational pursuits.

Many see LMS platforms evolving to include all forms of media. e.g. Read a series of news articles or a book or see a theatre production; then answer topical questions. That data and experience is recorded within the LMS to be reinforced through other instruction over the course of a lifetime. Content providers will first seek your knowledge proficiency on a topic before sending you their own educational content.



# Walmartification to Disneyfication

## Retail Experience Design

Retail stores continue to respond with experience-focused strategies that provide a compelling reason to shop offline.

The proliferation of digital tools (e.g. smart phones, tablets) and low cost LED *projection* systems are being explored as platforms for customer engagement.

Microsoft continues to expand its patent portfolio for projection systems and 3D object interactions enabling the use of projection to transform any surface into an interactive experience.

Retailers and Advertisers will continue to shift towards 'experience' models to maintain traffic flow and improve customer engagement as expectations around digitally facilitated moments using carried mobile devices and in-store systems.



Disney  
Side by Side™



Low-cost LED  
Pico Projectors



MIT's *Sixth Sense* Project  
[Wearable Projection System]

# Rise of Personal Software Assistants

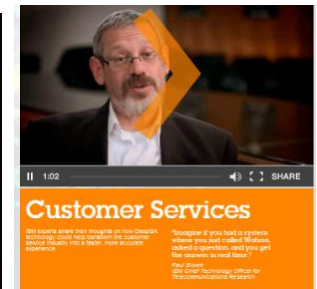
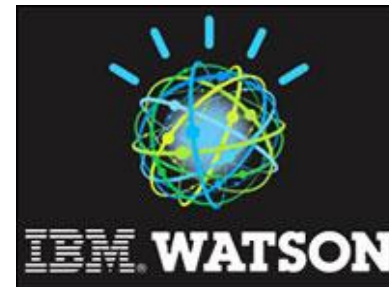
We are witnessing the release of first generation software-based Personal Assistants (or *Agents*) based on natural language interfaces. These software assistants are likely to serve as the *gatekeepers* for guarding private information – as well as the *answer engines* for providing users with a range of options related to decisions for retail, health, entertainment, learning on demand, travel and other daily tasks.

IBM Watson™ is a *deep question and answer* agent designed to support human workers in healthcare, finance & customer service. Apple Siri™ and extensions of Google Voice are general purpose consumer-facing platforms that will be used for integrating *third-party* applications developed by retailers and service providers.

Personal Assistants are likely to transform workplace, learning environments and consumer experiences by supporting the execution of mundane tasks and rote decisions– and giving broader context to more information-dependent decisions.



Siri. Beta  
Your wish is  
its command.



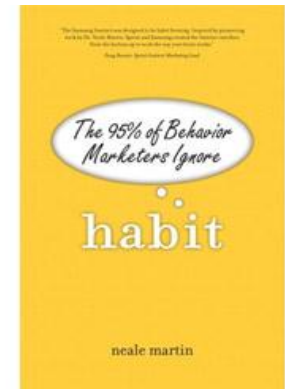
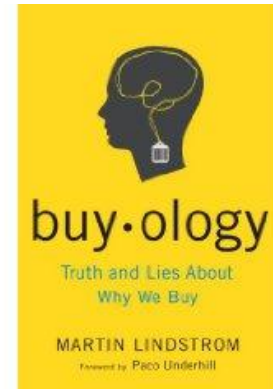
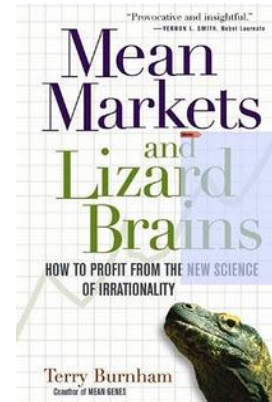
# New Science of Decision Making

Business leaders are turning to the rapidly expanding field of applied neuro-economics and neuro-marketing to transform sales and marketing strategies associated with widely observed but poorly understood aspects of consumer behavior and purchasing decisions.

Today we see neuro-oriented strategies taking hold in consumer research and marketing departments of major consumer product and service companies such as P&G and Google.

The next stage for applied *neuro* strategies will likely expand within organizations via Human Resource (HR) and Learning & Development (L&D) units tasked with improving incentive programs for workforce culture and productivity.

Product design & promotion strategies and workplace policies will be aligned with both the *conscious* and *unconscious* mind that shapes human behavior.



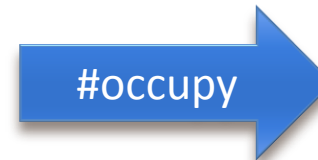
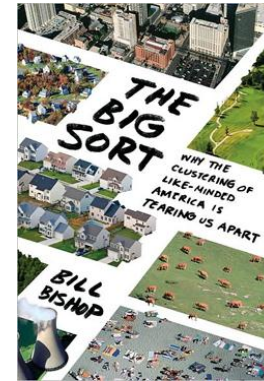
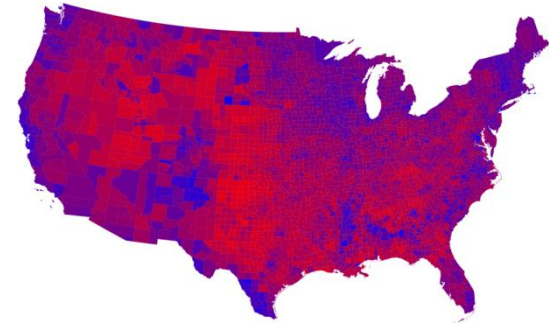
# Clustered Communities / Rise of Tribes

Sociologists describe a trend towards the fragmentation and isolation of values-based communities in geographically relevant locations (e.g. metro, rural, *NSEW*) and online social networks.

The so-called *rise of tribes* provide a comfortable space for personal growth and stronger community affiliation, but increases the risk of economic inequality, cultural collisions, political extremism and legislative gridlock.

This fragmentation is reinforced by the shift from a Broadcast Media age which influenced a *mainstream* culture, to a narrow-casting era of Social Media where individuals increasingly choose to filter and consume information that reinforces their *narrow* worldviews.

Governments, businesses and brands will continue to struggle in finding their relevance in a more fragmented cultural and consumer landscape.



*Occupy Coke*



# Uncertainties of Labor Legislation

The future of labor and workplace legislation remains volatile and filled with uncertainties. The US labor landscape is likely to be transformed around key demographic transitions around the political influence and shifting expectations of Aging of Baby Boomers, civically oriented *Millennials* and rise of Hispanic voting block.

Some workplace pundits believe we are on a crash course related to age-based discrimination. Others see battles between labor groups and State leaders as they confront shortfalls in state pension funds.

Workforce training efforts could see major investments from both private companies and public sector to fill faster growing sectors in advanced manufacturing, fulfillment services and healthcare.



# Labor Productivity Augmentation

We are at the dawn of physical productivity enhancement within manufacturing, fulfillment and retail environments. Fulfillment workers use headsets that provide audio queues on every next step. In manufacturing hubs, lasers point to products to ensure the right unit is packaged ready for retail.

Beyond these applications, the nascent field of biomechanics aims to integrate mechanical solutions to natural human body movement. Early stage biomechanics are now being utilized by military (*exoskeletons*) and in agricultural settings for food production and harvesting. Biomechanical applications are also being positioned as central to lowering healthcare costs for the world's rapidly aging population.

French researchers are advancing textile versions of artificial muscles using carbon nanotube composite fiber that can outperform strength of spider silk and Kevlar fiber.

First stage biomechanical systems will likely be based on advanced polymers and nano-enhanced textiles used in industrial and consumer-grade systems that support knees, backs, wrists and elbows as a way to reduce risk of physical harm and improve labor productivity.



Carbon Nanomaterials