



DATA IS THE KING OF THE DIGITAL EMPIRE

Mahesh Nattanmai
Chief Digital Health Strategist



Department
of Health



International Workshop on Urban Data Science
Rochester Institute of Technology, NY
July 24th and 25th, 2017



Jointly hosted by Rochester Institute of
Technology and Indian Institute of
Technology, Madras



JAN
2017

GLOBAL DIGITAL SNAPSHOT

KEY STATISTICAL INDICATORS FOR THE WORLD'S INTERNET, MOBILE, AND SOCIAL MEDIA USERS

TOTAL
POPULATION



7.476
BILLION

URBANISATION:
54%

INTERNET
USERS



3.773
BILLION

PENETRATION:
50%

ACTIVE SOCIAL
MEDIA USERS



2.789
BILLION

PENETRATION:
37%

MOBILE
SUBSCRIPTIONS



8.047
BILLION

vs. POPULATION:
108%

ACTIVE MOBILE
SOCIAL USERS



2.549
BILLION

PENETRATION:
34%



we
are
social



we
are
social



JAN 2017

THE UNITED STATES OF AMERICA

A SNAPSHOT OF THE COUNTRY'S KEY DIGITAL STATISTICAL INDICATORS



SOURCES: POPULATION: UNITED NATIONS; U.S. CENSUS BUREAU; INTERNET: INTERNETWORLDSTATS, ITU, INTERNETLIVESTATS, CIA WORLD FACTBOOK; FACEBOOK, NATIONAL REGULATORY AUTHORITIES; SOCIAL MEDIA AND MOBILE SOCIAL MEDIA: FACEBOOK, TENCENT, VKONTAKTE, LIVEINTERNET.RU, KAKAO, NAVER, NIKI ACHAEI, CAFEBAZAR.IR, SIMILARWEB, DING; EXTRAPOLATION OF TNS DATA; MOBILE: GSMA INTELLIGENCE, EXTRAPOLATION OF EMARKETER AND ERICSSON DATA.



Machine-generated data to increase 15x by 2020 (representing 40% of the digital universe)

IDC projects that the digital universe will reach 40 ZBs (Zeta Bytes) by 2020 vs. 8.5 ZBs in 2015

JAN 2017

CHINA

A SNAPSHOT OF THE COUNTRY'S KEY DIGITAL STATISTICAL INDICATORS



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INDIA

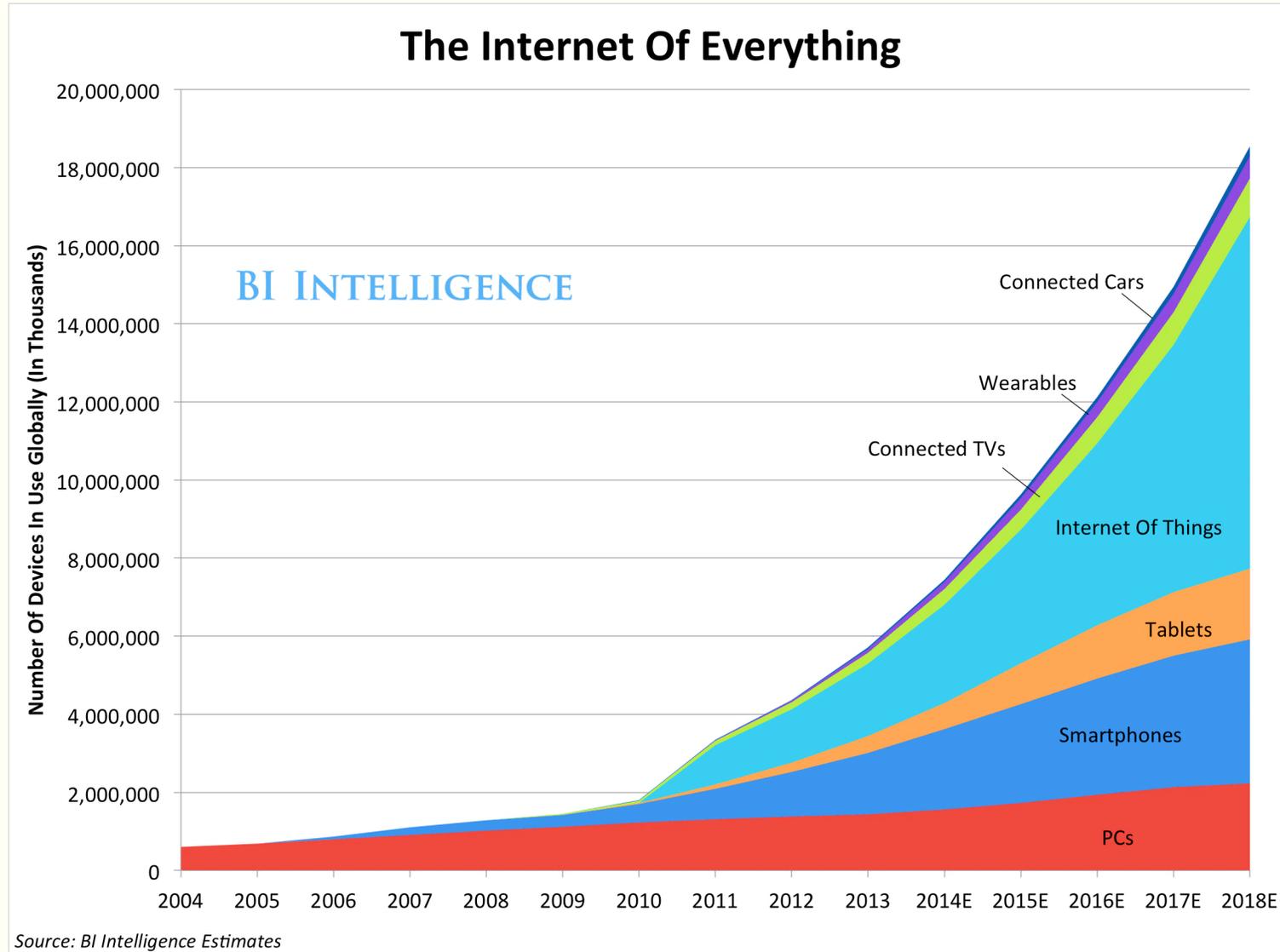
A SNAPSHOT OF THE COUNTRY'S KEY DIGITAL STATISTICAL INDICATORS



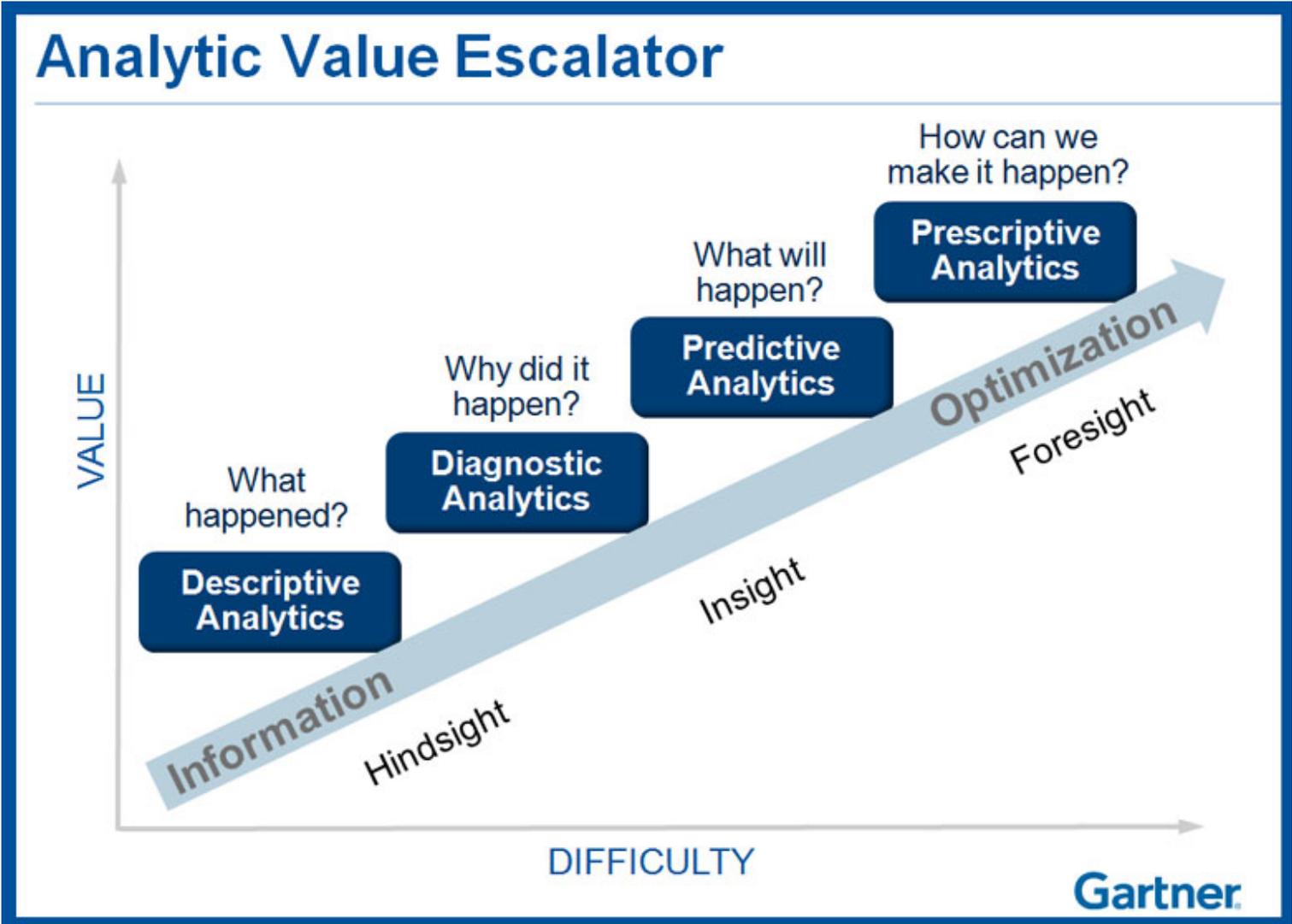
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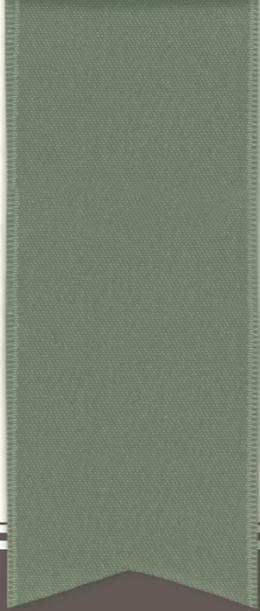


So, where is this Zetta Bytes of data coming from?



What can we do with it?





REIMAGINING GOVERNMENT

Transformation Initiatives

Governor Cuomo's Vision

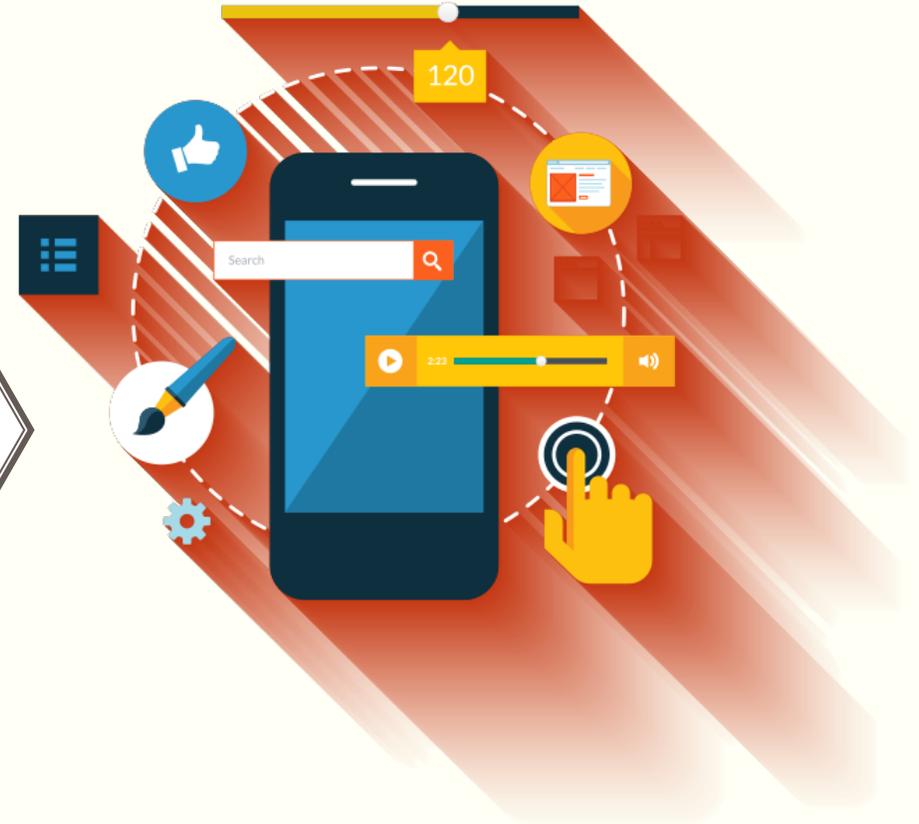
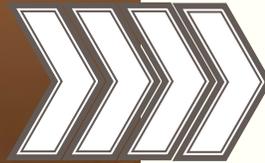


- One New York
- Seamless Digital Experience

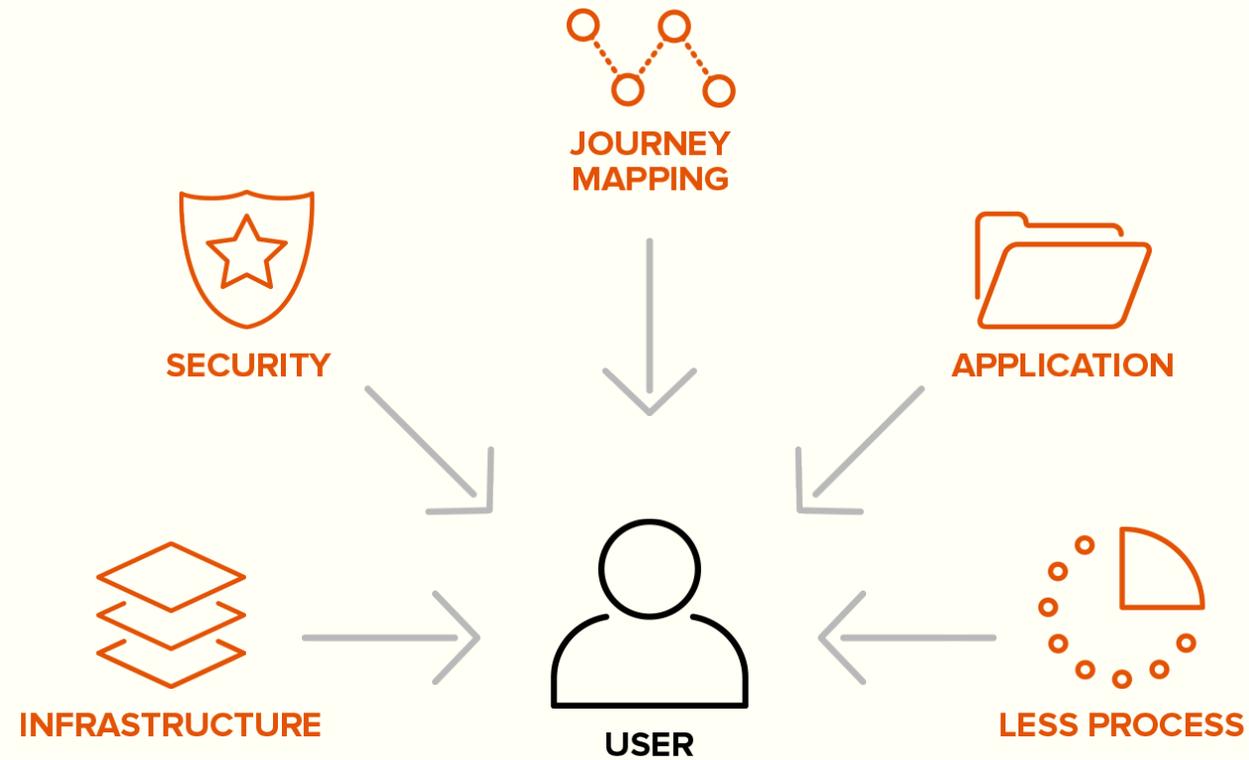
Citizen Experience?

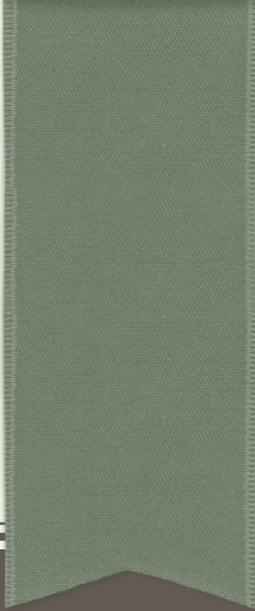


```
DISPLAY CUSTOMER INFORMATION      Acct # B10099
Credit Limit: 0      Finance Charge? Y      Area:      Sort Codes: B
Name: A CLEAN WELL LIGHTED PLACE FOR      BILLING      SHIPPING
Address: 601 VAN HESS AVENUE      Name: A CLEAN WELL LIGHTED PLACE FOR
City: SAN FRANCISCO      Address: 601 VAN HESS AVENUE
State: CA      City: SAN FRANCISCO
Zip: 94102      State: CA
Country: U.S.A      Zip: 94102
Phone:      Country:
Enter 7 to skip back, 1 to skip forward, or <ESC> to exit
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User-Centric – Aligning processes and tools





ENTERPRISE SOLUTIONS

Consumer focused



Your Guide to Doing Business in New York

Business Express helps guide users through business and professional requirements.

Streamlined over
1,500
transactions
across 45+
entities

BUSINESS MADE EASY



[STARTER GUIDE](#)



[CUSTOM BUSINESS CHECKLIST](#)



[SUPPORT & INCENTIVES](#)

NY Business Express Vision

Single, user-friendly online portal for all business and occupational licensing activities, including

- Information on incentives and other support services
- Consolidated Business Application
- Single contact center
- Single User Profile and User Data

Easier for businesses to navigate and get licensed by NY State government

- Akin to best private sector experience
- Reduced duplicative work by agencies
 - Data entry and validation
 - Exception checking
 - Confirmation of WC
- Better business intelligence



Services

News

Government

Q Search

Settings

START A BUSINESS IN NEW YORK

New Business Checklist

SHARE

Introduction

Business Category

Business Location

Legal Structure

Employees

Business Details

Your New Business Checklist

Business Category

What kind of business do you want to start?

res

Submit

restaurant

restaurant construction

research services

residential services

NEXT STEP: BUSINESS LOCATION

SAVE & EXIT
FOR PLACEMENT ONLY

FOR PLACEMENT ONLY
CHAT CALL EMAIL

TIPS

Your a
will be
regula
apply
busine



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Your New Business Checklist

Legal Structure

FOR PLACEMENT ONLY
CHAT CALL EMAIL

What legal structure will your business use?



SOLE PROPRIETOR

Sole proprietorship is the the simplest business form and not a legal entity. Not state filing agreement is required. [Learn More](#)



PARTNERSHIP

There are a variety of partnership types. Some are simple, requiring no state filing agreement. Others are more complex. [Learn More](#)

SELECT THIS OPTION



CORPORATION

Corporations allow for a more complex organization. Select this option for any kind of corporation including S-Corps, C-Corps, or Professional Corporations. [Learn More](#)



LIMITED LIABILITY COMPANY

Limited Liability Companies are a hybrid business form, combining the liability protection of a corporation with the tax treatment of a partnership.

TIPS

Not sure which business structure to use?

[Learn more about business structures.](#)

START A BUSINESS IN NEW YORK

New Business Checklist

Introduction
Business Category
Business Location
Legal Structure
Employees
Business Details
Your New Business Checklist

Your New Business Checklist

FOR PLACEMENT ONLY

Based on the following information your business is required to have lorem ipsum. This is placeholder text. Click on the tabs to the left to edit your responses.

NEW BUSINESS CHECKLIST- PART 1

REQUIREMENT	FILING FEE	PDF FORM	APPLY ONLINE
Articles of Organization - LLC New York Department of State	\$200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Employer Identification Number (EIN) Federal Government	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Certificate of Authority to Collect Sales Tax New York State Department of Taxation and Finance	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Disability Benefits Coverage New York State Department of Labor	\$200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Unemployment Insurance - General Business New York State Department of Labor	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Workers Compensation and Employers' Liability Insurance New York State Department of Labor	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>
On Premises Liquor License Generally considered to be the standard "bar" license. Allows on-premises consumption of liquor, wine and beer and also allows for sale of beer (only) for off-premises consumption. Food, such as soups and sandwiches, MUST be served. Learn More New York State Liquor Authority	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>

★ SAVE TO MY ACCOUNT

APPLY FOR ALL ONLINE

New Business Checklist also includes information on federal and local government requirements

NEW BUSINESS CHECKLIST- PART 2

REQUIREMENT	FILING FEE	PDF FORM	APPLY ONLINE
Alcohol Dealer Registration Federal Government	\$200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Food Service Establishment Permit Albany County	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Building and Zoning Permit Albany County	free	<input type="checkbox"/>	<input checked="" type="checkbox"/>

★ SAVE TO MY ACCOUNT

Consolidated Business Application gathers data once and shares with multiple State agencies (Dept of State, Tax, Labor, NYS Liquor Authority)



START A BUSINESS IN NEW YORK

New Business Application: Part 1

SHARE

Your Business Checklist

Introduction

Business Name

Business Location

Business Contacts

Application Summary

Submit Payment

Confirmation

DOWNLOAD ALL PART 1 APPLICATION FORMS (PDF 133 KB)

Business Name

Required items are marked with a star. *

FOR PLACEMENT ONLY

Your Business Name *

Eat at Joe's



Sorry, that business name is already registered to another business in New York State.

CHECK NAME AVAILABILITY

Name Ending *

LP



TIPS

Name endings must match the legal structure of your business. [More](#)

+ Add "Doing Business As" (DBA) Name - optional

Add a DBA if this business will operate under any name other than the one above. For example, "ABC Capital" may operate business under "XYZ Tech Company."

NEXT STEP: BUSINESS LOCATION

SAVE & EXIT
FOR PLACEMENT ONLY

Real time validation is made available to avoid delays in application processing due to duplicate business names



Your Business Profile

★ SAVE | PRINT | SHARE | f | t

EMILY R. Business Profile

Overview

Your Recent Activity

All Businesses

25%	Articles of Organization - LLC (DOS 1336) For: Emily Roebling Holding Company, LLC Details	Jul. 29 Last Update	Resume Application
Approved	Application for Reservation of Name (DOS 1233) For: Emily Roebling Holding Company, LLC Details	Jul. 22 Date Approved	View Certificate
Pending	Certificate of Authority to Collect Sales Tax (DTF 17) For: Emily Roebling Holding Company, LLC Details	Jul. 29 - Aug. 5 Expected Decision	Contact Us
Needs Attention	On-Premises Liquor License (SLA 110) For: Brooklyn Bridge, Inc. Details	8-10 Weeks Expected Decision After Submission	View Details
Approved	Application for Reservation of Name	Jul. 22	

ALERT Fees Overdue

\$210 fee for Lorem Ipsum was **due on Jul. 15, 2015** | For: Emily Roebling Holding Company, LLC

[DETAILS](#)

NOTICE Expiration

MWBE Certification will **expire on Oct. 01, 2015** | For: Emily Roebling Holding Company, LLC

[DETAILS](#)

YOUR CUSTOM CHECKLISTS

Overview

Applications (3) >

Manage Licenses Documents Business Data Users >

Business Checklists (3) >

Account Settings >

Log Out >

- Single Business Profile
- Includes Alerts and Notification
- Document Vault to save documents securely online for future transactions
- Common Data that businesses have to provide repeatedly to every agency is stored once for all transactions
- Status is updated based on information received from multiple agency systems



**Department
of Health**

NYS DEPARTMENT OF HEALTH

Digital Strategy

NYS – Department of Health - Current Initiatives



Department
of Health

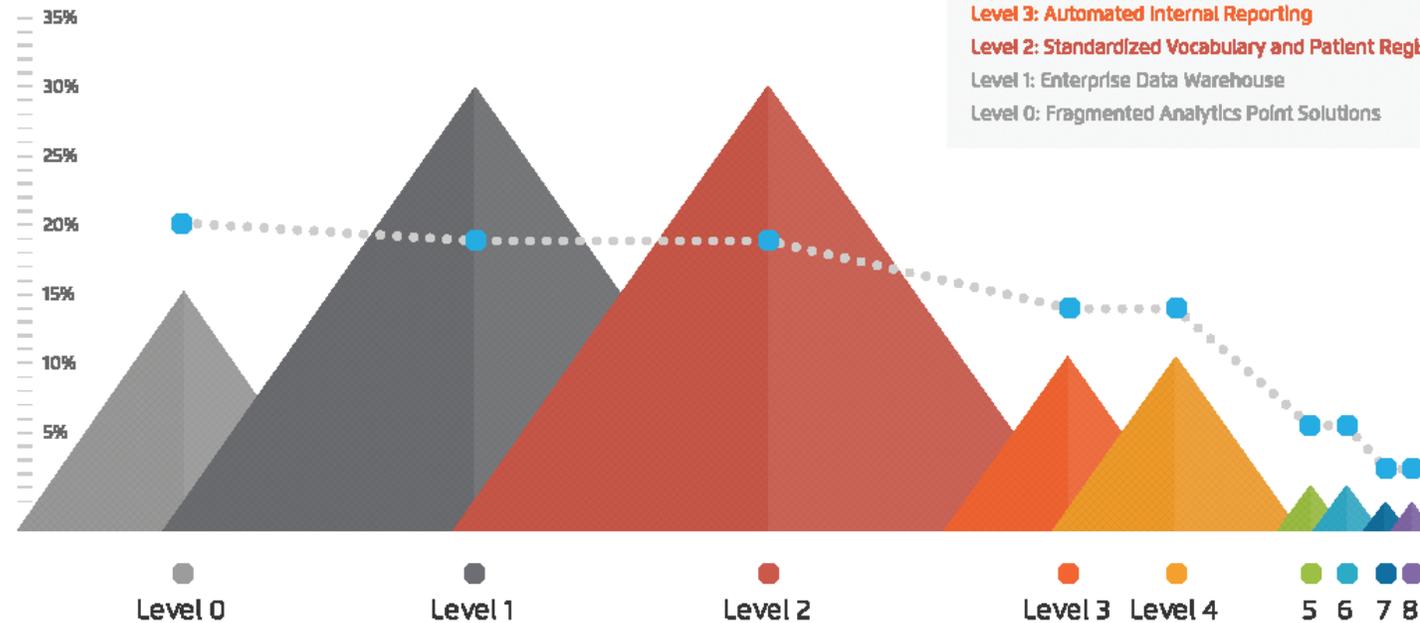
NYS Health Profiles	Website providing quality and inspections information about Hospitals, Nursing Homes, Home Care, Hospice and Doctors (incl. misconduct issues) https://profiles.health.ny.gov/
Health plan ratings	Enabling public to view State ratings of plans (based on QARR). https://health.ny.gov/health_care/managed_care/reports/eqarr/2016/statewide/commercial/managing_preventive_care.htm
Prescription Drug Prices	Prescription Drug Prices in New York State of the 150 most frequently prescribed drugs. https://apps.health.ny.gov/pdpw/SearchDrugs/Home.action
NYS Provider & Health Plan Look-Up	An on-line tool that can be used by consumers to research provider networks and health plans. By using this tool, consumers can search for their preferred providers, including doctors and hospitals to see which health plans have those providers in their network. https://pndslookup.health.ny.gov/
Open Data	500+ data sets https://healthdata.ny.gov/

Analytics Adoption in Healthcare



ANALYTICS ADOPTION MODEL COMPARISON INDUSTRY VS. SELF ASSESSMENT

When asked to rate the analytics maturity of the industry compared to their own health system, executives think they are doing better than the industry. There is much work to do to get the market to advanced levels 5–8.



INDUSTRY
119 RESPONDENTS

SELF ASSESSMENT
305 RESPONDENTS

- Level 8: Personalized Medicine and Prescriptive Analytics
- Level 7: Clinical Risk Intervention and Predictive Analytics
- Level 6: Population Health Management and Suggestive Analytics
- Level 5: Waste and Care Variability Reduction
- Level 4: Automated External Reporting
- Level 3: Automated Internal Reporting
- Level 2: Standardized Vocabulary and Patient Registries
- Level 1: Enterprise Data Warehouse
- Level 0: Fragmented Analytics Point Solutions

Statewide Health Information Network of NY (SHIN-NY)

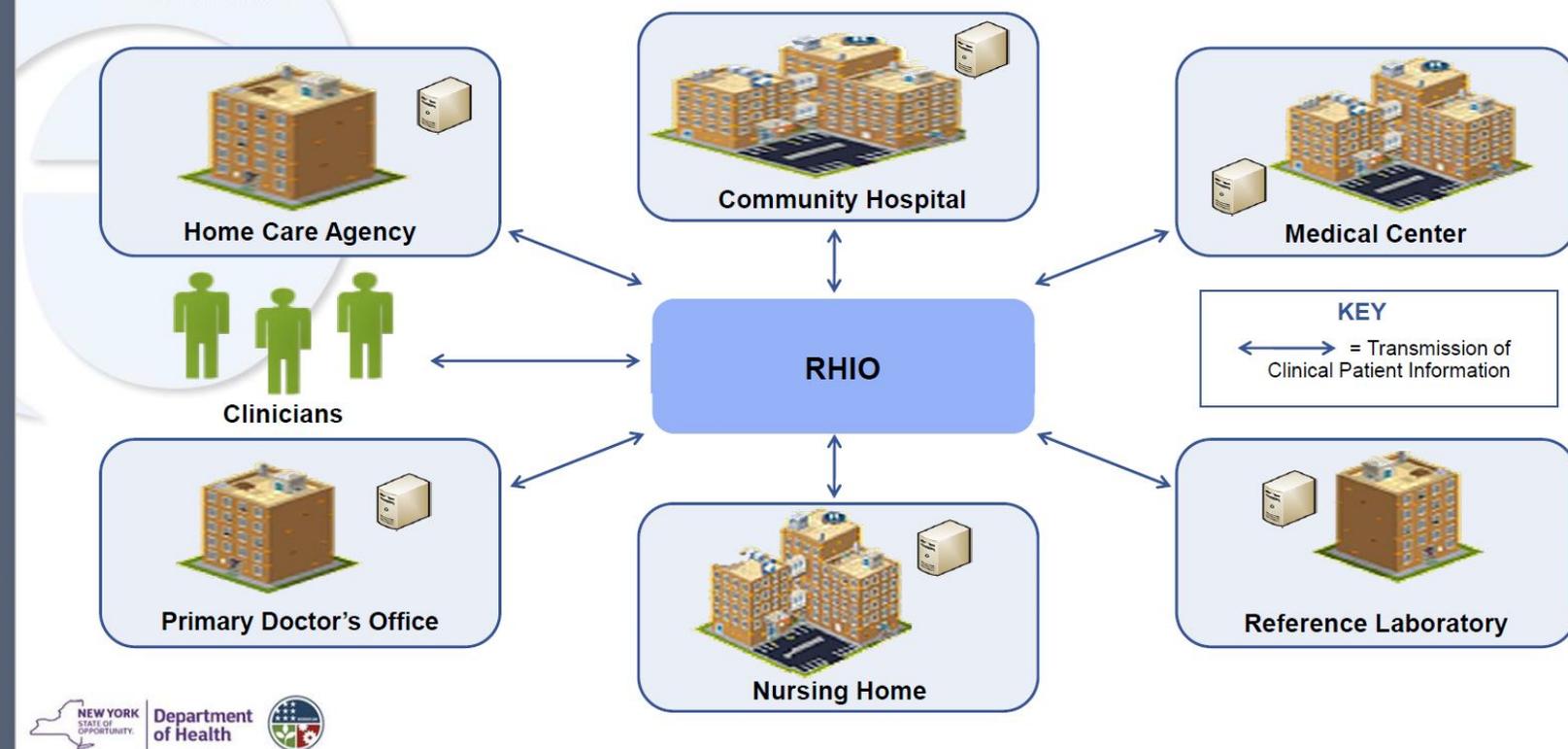
- A secure network of Health Information Exchanges (HIEs) for sharing electronic clinical records in New York State
- With patient consent, electronic health records can be accessed and exchanged securely between healthcare providers
- Key Services:
 - Aggregate electronic health records from participating healthcare providers
 - Provide access to network via EHRs and/or portals
 - Allow providers to search for and access electronic health information from other providers
 - Makes available patient contributed data to patient's other providers
 - Deliver notifications (alerts) and secure message exchange (DIRECT)



SHIN-NY 9 regional hubs (RHIOs) connect to the providers

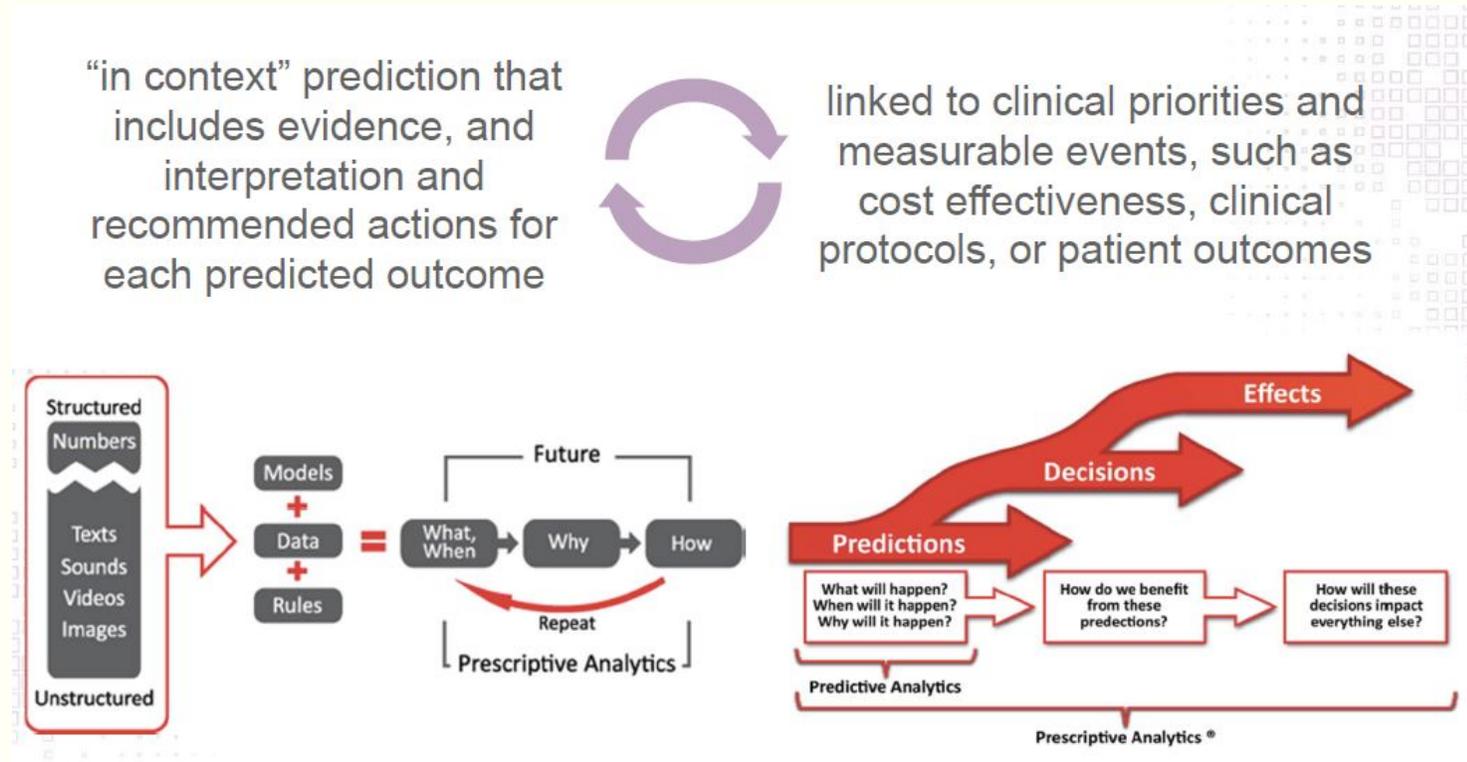
Examples of Patient Data

- Demographics
- Histories
- Allergies
- Immunizations
- Encounters
- Medications
- Diagnoses
- Dental Records
- Admissions / Discharges
- Lab Reports



What is the NYS's vision?

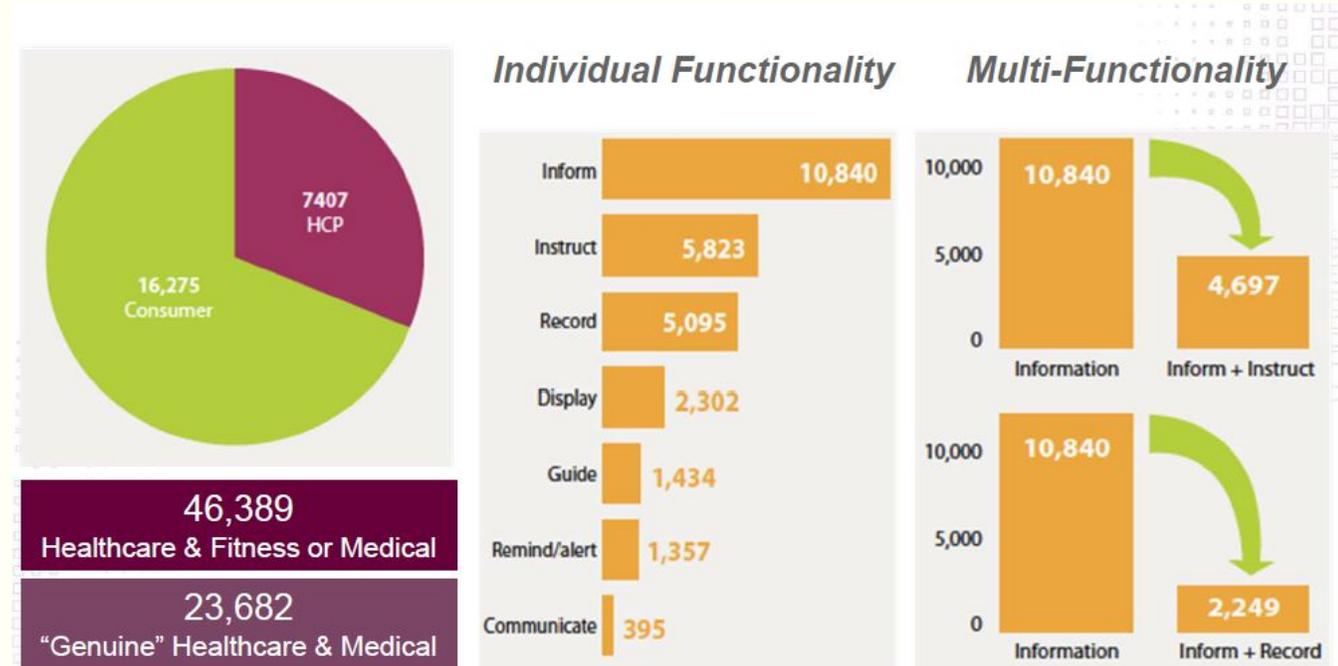
- Establish a “Network-of-Networks” where a New Yorker can visit any provider and their record travels with them
- It helps both the consumer and provider
 - Empower consumer / patient self –management
 - Informed shared-decision making
- Knowing who, when and what will enable prescriptive analytics – Interventions & Decision Support



Source:
HiMSS15

Mobile Health Apps Functionality

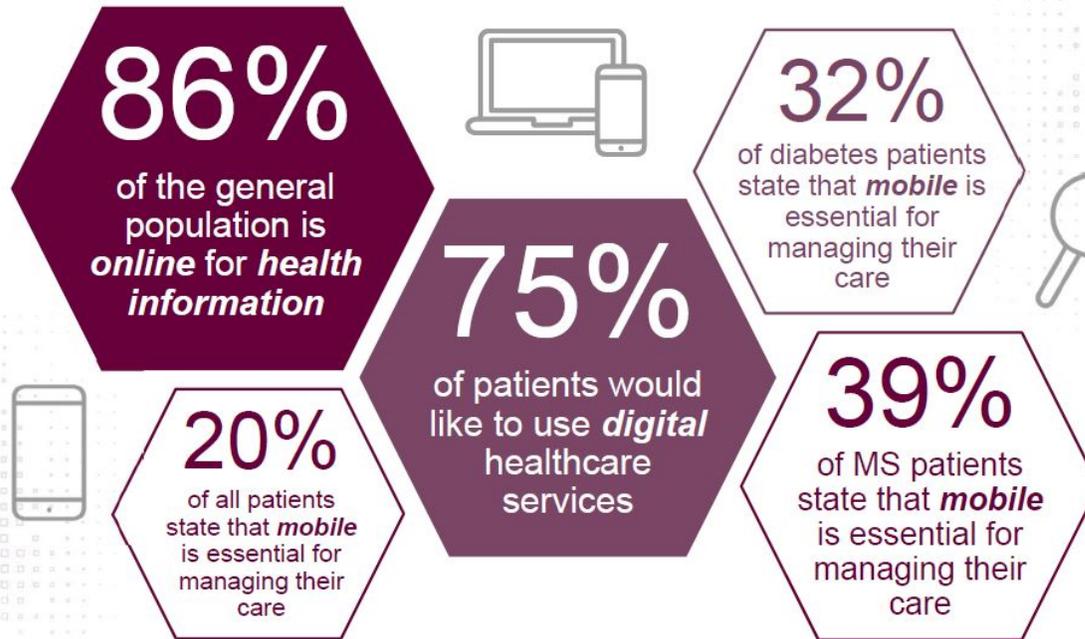
- Majority of the Healthcare Apps are providing general patient information
- Major Obstacles
 - Ownership, privacy and interoperability of patient data
 - Matching / Master Indexes
 - Monetization / reimbursement of costs for use of apps, connected devices or wearable as part of care delivery



Source: IMS Institute Patient Apps for Improved Healthcare October 2013

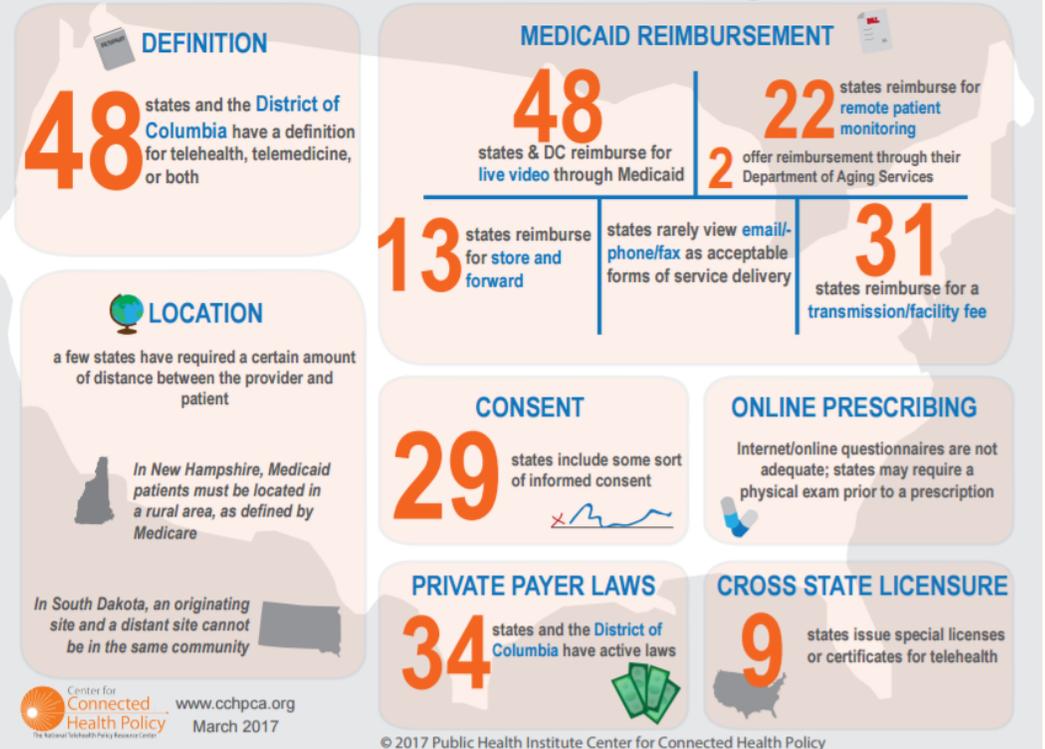
Opportunities to provide a cost effective Healthcare

What are patients' needs and wants?



Sources: McKinsey Digital Patient Survey, Manhattan Research, ComScore, MaKovsky Health

State Telehealth Laws and Medicaid Program Policies



Digital revolution will be led by the new king: DATA

- Consumer Services industry (Amazon, Apple, Uber) is exploring new ways to use data to offer what they need, when they need it
- Consumers are expecting the same level of experience from other industries
- Consumers are willing to trade-in privacy for convenience including sharing location, preferences
- Application Programming Interfaces (APIs) are making the applications and devices be more vendor / software agnostic.

